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DISEASES CAUSED BY BACTERIA AND FUNGI.

HARE, T., & FRY, R. M. (1938). **Preliminary Observations of an Infection of Dogs by Beta haemolytic Streptococci.**—*Vet. Rec.* **50.** 213-218. 2 tables. [5 refs.]

HARE records preliminary observations on a contagious canine disease associated with and suspected to be due to infection with beta-haemolytic streptococci. The disease may be manifested in adults and puppies of either sex as an adenitis, as a septicaemia, or, in the case of the bitch, as an interference with oestral and breeding cycles. Histories of 15 representative cases of the different syndromes are recorded. Cultural examination of vaginal swabs of 122 bitches and of pharyngeal swabs of 12 dogs in five breeding kennels revealed the organism in 55 of the former and in one of the latter.

FRY, using Lancefield's precipitin method of grouping, examined 29 of HARE's strains, and found that 28 were of group G and one of group A. He contrasted these findings with the incidence in human infections.—E. E. JELBART.

TAKEDA, K. (1935). Immunisatorische Untersuchung von Milchstreptokokken. **[Immunization Tests with Milk Streptococci].**—*Z. ImmunForsch.* **86.** 347-349.

T. found that, by means of agglutinin-absorption tests, 13 strains of milk streptococci [presumably *Str. lactis*] could be divided into two types. Sera (made with eight strains) contained both specific and non-specific antibodies, but could be made specific for one or the other type by appropriate absorption. The unabsorbed non-specific sera also agglutinated enterococci and certain " mouth " streptococci. They had no action on *Str. viridans*, *Str. lanceolatus* or *Str. haemolyticus*.—A. W. STABLEFORTH.

APZALGA, A. I. (1936). Karviu tesmens uzdegimai Lietuvoje. I. Pranesimas: Literature. **[Bovine Mastitis in Lithuania. I. Introduction].**—*Vet. ir Zootech., Kovno.* **13.** 32-55.

SAVICKIS, J. (1936). Karviu tesmens uzdegimai Lietuvoje. Nuosavi tyrimai. II. Pranesimas: Coli mastitai. III. Pranesimas: Streptokoku mastitai. C. Streptokoku mastitai. IV. Pranesimas: mikrokoku mastitai. V. Pranesimas: bact. pyogenes mastitai, nespecifiniai mastitai, mastitu gydymas ir isvados. [**Bovine Mastitis in Lithuania. II. *Bact. coli* Infection. III. Streptococcal Mastitis. IV. Micrococcal Mastitis. V. *C. pyogenes* Mastitis**]. —*Ibid.* 97-128, 223-246, 322-329 and 348-356. 5 figs., 4 tables. [Num. refs.]

325 cases of mastitis were examined during the last three years. The organisms responsible were as follows:– *Bact. coli* or *Bact. aerogenes* in 54·2%, micrococci in 16·6%, *Streptococcus agalactiae* and other streptococci in 9·2%, miscellaneous organisms in 14·5% and *Corynebact. pyogenes* in 5·5% of cases. *Bact. coli* seems to be the principal cause of mastitis in Lithuania, the indol-producing strain being most commonly met. Cases in which non-indol-producing *Bact. coli* were found (*Bact. aerogenes*) were rare and their course milder. Out of 63 cases examined, however, five showed paresis of the hind quarters. Two cows died and three had to be destroyed, which makes a mortality of 8%.

The most serious form of streptococcal mastitis in Lithuania, from the clinical aspect, is caused by *Str. pyogenes*. It starts as an acute mastitis with raised body-temperature but soon becomes chronic. The milk of affected animals is dangerous to calves as well as to human beings. Very few cases of mastitis in Lithuania are caused by *Str. agalactiae*. The course of the disease is chronic in the latter infection and it has been reproduced by artificial infection. Other species of streptococci have also occasionally been isolated from acute and chronic cases. Chronic micrococcal mastitis is very mild and *Corynebact. pyogenes* mastitis is always very acute. After recovery from a primary specific mastitis, a non-specific form sometimes develops, organisms then present being saprophytes.

The result of these investigations seems to indicate that mastitis in Lithuania is totally different from that in Germany, but closely resembles that seen in Latvia. —A. W. MÖLLER.

I. CHAPMAN, G. H. (1936). **Specificity of the Dye in the Crystal-Violet Agar Reaction of Staphylococci.**—*J. Bact.* **32.** 199-205. 2 tables. [2 refs.]

II. LEVINE, B. S. (1937). **Studies in Staphylococcus Toxin. The Phenomenon of Hot-Cold Lysis by Active Staphylococcus Filtrates.**—*J. infect. Dis.* **61.** 345-347. 1 table, 1 graph. [7 refs.]

III. HOFFSTADT, Rachel E., & CLARK, W. M. (1938). **The Chemical Composition and Antigenic Properties of Fractions of the Smooth and Rough Strains of Staphylococcus Aureus.**—*Ibid.* **62.** 70-82. 6 tables. [4 refs.]

I. Heavy inoculation of staphylococci on to crystal violet agar gave orange- or violet-coloured growths. The active group in the dye was found to be either pentamethyl- or hexamethyl-pararosanilin or both.

II. The haemolytic action of staphylococcus culture filtrates reaches greater heights when the period of warm incubation is followed by another period of incubation at room temperature or in the cold—the so-called " hot-cold lysis ". L. claims that the reaction between the erythrocytes and the lytic principles of staphylococcus filtrates is of the nature of adsorption and that this phenomenon is an expression of the basic principles which control adsorption in general.

III. The S strain of *Staph. aureus* was separated into 16 chemical fractions and the R variant into 15 fractions. Agglutinins were produced by all fractions; non-specific agglutinins were found in the acid range and specific agglutinins in the alkali range.—A. ROBERTSON.

DELAUNAY, A. (1938). L'immunité antistaphylococcique conférée par l'anatoxine spécifique et son mécanisme. (Étude expérimentale et anatomo-pathologique). [**Antistaphylococcic Immunity Conferred by Specific Anatoxin**]. —*Rev. Immunol.* **4.** 65-96. 10 figs., 1 table. [Numerous refs.]

In order to obtain a more complete understanding of the mechanism of antistaphylococcal immunity, D. undertook, on RAMON'S suggestion, a series of histopathological researches.

A histological study was made of the cellular reactions which occurred in rabbits immunized with staphylococcus anatoxin, and also in untreated control rabbits following intradermal injections with a suspension of a toxigenic staphylococcus. The changes are described in detail and comparative tables are given to show the influence of antitoxic immunity on the local reactions.

D. found that the principal part is played by antitoxin, the cellular defences playing a secondary role. He states that phagocytosis of staphylococci is rapid when there is antitoxin present to neutralize the toxin elaborated by the organisms.

—GWILYM O. DAVIES.

ŠIPKA, M. (1937). Nasa opažanja kod bojenja B. anthracis po Fotovoj metodi. [**Foth's Diagnostic Stain for Anthrax**].—*Jugoslov. vet. Glasn.* **17.** 142-147. 3 tables. [5 refs.] [German summary].

S. advocates the use of Foth's stain—a Romanowsky type of stain—for anthrax material. He speaks of the comparative value of microscopic examination and of the precipitation test.—B. OSWALD (KRIŽEVCI).

HUPBAUER, A. (1937). Kritičko promatranje oboljenja od plinovitog edema nakon cijepljenja sa glukozidskom vakcinom. [**Gas Gangrene following Anti-Anthrax Immunization with Glucoside Vaccine**].—*Jugoslov. vet. Glasn.* **17.** 408-409. [3 refs.] [German summary].

Some cases of fatal gas gangrene in cattle following vaccination against anthrax with a glucoside vaccine are described. H. considers that the contents of the vaccine were responsible for the cases, but that the local reactions cause an increase in anaerobic bacteria derived from the intestine, gas gangrene resulting.

—B. OSWALD (KRIŽEVCI).

WAGENER, K. (1936). Untersuchungen über die Leistungen des freiwilligen Tuberkulosebekämpfungsverfahrens. I. Die tatsächliche Verseuchung mit offener Lungentuberkulose. II. Versuch und Ergebnisse einer verschärften Tuberkulosebekämpfung. [**Results of the Voluntary Tuberculosis Campaign—Germany. I. Actual Incidence of Open Lung TB. II. Experiments and Results of a Strict TB. Campaign**].—*Tierärztl. Rdsch.* **42.** 863-866 and 883-886.

WAGENER, K., & NICOLAUS, W. (1937). Untersuchungen über die Leistungen des freiwilligen Tuberkulosebekämpfungsverfahrens. III. Vergleich der klinisch-bakteriologischen mit pathologisch-anatomischen Untersuchungen an lungentuberkulösen Rindern. [**Results of the Voluntary TB. Campaign. III. Comparative Diagnosis of Lung Cases in Cattle**].—*Ibid.* **43.** 55-61. 8 figs. [3 refs.]

The bronchial mucus of cattle was examined with a view to determining the number secreting tubercle bacilli. In 1933, 1,028 cattle belonging to 65 herds were tested and 19·6% were found to be infected. This figure when compared with that given for animals affected according to OSTERTAG'S clinical findings shows the greatly increased number which are potentially " open " cases of TB.

The elimination of affected animals detected by testing the bronchial mucus is apparently not effective in reducing the incidence of TB., and the authors find that the reason for this is that clinical examination fails to detect TB. of the lung when the disease is in its earliest stages.—S. J. EDWARDS.

BENEDETTO, F. (1937). Il metodo di Loewenstein per la ricerca del bacillo di Koch nel sangue di bovini tubercolotici. [**Blood Cultures from Tuberculous Cattle in Löwenstein's Medium**].—*Nuovo Ercol.* **42.** 367-372. [5 refs.]

Blood samples from 62 cattle known to be affected with TB. were examined by Löwenstein's technique. In no case could tubercle bacilli be demonstrated in the blood stream. It was found that the removal of glycerin from the medium favoured the growth and development of bovine tubercle bacilli.—J. A. NICHOLSON.

NIELAND. (1938). Haut- und Nasenscheidewandtuberkulose beim Pferd. [**Tuberculosis of the Skin and Nasal Septum in a Horse**].—*Dtsch. tierärztl. Wschr.* **46.** 98-100. [Numerous refs.]

A record of an unusual case of TB. of the skin and subcutaneous tissues, in the form of numerous nodules varying greatly in size, together with a diffuse thickening of the nasal septum, commencing 5 cm. above the external nares and causing difficulty in inspiration.

No other tuberculous lesions were found at autopsy, but the alimentary tract was unfortunately not available: it is not possible, therefore, to decide whether the skin lesions were the result of generalization, though this is probable from their wide-spread distribution.—E. G. WHITE.

LAPORTE, R. (1937). Sensibilité des jeunes sujets à l'infection tuberculeuse expérimentale. [**Susceptibility of Young Animals to Experimental Tuberculosis**].—*C. R. Soc. Biol. Paris.* **126.** 667-669. [2 refs.]

Six ten-day-old chicks were inoculated (intraven.) with 1 mg. of a culture of bovine tubercle bacilli which was virulent for g. pigs and rabbits, but produced no lesions when inoculated (intraven.) into adult fowls. Four of the chicks died 7-16 days after injection, and autopsy revealed marked enlargement of the liver and spleen without macroscopic evidence of tubercles. Acid-fast bacilli were found in very large numbers in these organs and in the bone-marrow. The two survivors eventually succumbed to fowl pox four months after the inoculation. No macroscopic evidence of TB. was found, but tubercle bacilli were obtained in cultures of liver and spleen.

Intracerebral inoculation of varied doses of a bovine strain into chicks usually resulted in arrest of growth, symptoms of meningo-encephalitis and generalization, the organisms being recovered from various organs at autopsy. Intraperitoneal and subcutaneous inoculation resulted in a local lesion without generalization.

Some experiments on young g. pigs inoculated with a virulent avian strain of tubercle bacilli resulted in a reaction of the local lymph nodes considerably more pronounced than in adult animals receiving many times the dose.—E. G. WHITE.

KLIEWE, H., & SCHUPPENER, A. (1937). Ueber die Lebensdauer der Tuberkelbazillen in saurer Milch. [**Viability of Tubercle Bacilli in Sour Milk**].—*Zlb. Bakt. I.* (*Orig.*). **139.** 180-183. [6 refs.]

Ordinary raw milk was placed in flasks and kept for 1-2 days at room temperature. Samples of it were then inoculated separately with human and bovine tubercle bacilli, and after some days' incubation these sour milk cultures were tested for pathogenicity on g. pigs, centrifuge sediment being injected subcu-

taneously. It was found that the human type bacillus was no longer viable after seven days in sour milk, but that the bovine type bacillus was still viable after at least 20 days under similar conditions.—M. BURKE.

HEINZ, F. O. (1937). Der kulturelle Nachweis von Tuberkelbakterien in nicht-tuberkulösen Hühnern. [**Demonstration of Tubercle Bacilli in Non-Tuberculous Fowls**].—*Inaug. Diss., Berlin.* pp. 29. 2 tables. [Num. refs.]

The liver, spleen, kidneys and bone-marrow of 180 fowls were examined culturally for tubercle bacilli. No macroscopic lesions of TB. were found in any of the birds, 131 of which were aged one year, 44, two years, and five, three years. All were sent in for diagnosis of the cause of death, and a variety of pathological conditions was found.

The media used were Petragnani's solid egg, Witte's solid egg, and Besredka's fluid egg. Control cultures put up from fowls with macroscopic lesions of TB. gave good results on these media.

Tubercle bacilli were isolated from three of the fowls. G. pigs inoculated with these three strains developed ulceration at the site of inoculation and caseating TB. of the regional lymph nodes.—E. G. WHITE.

I. GOETERS, W. (1936). Die Häufigkeit der durch den Typus bovinus hervorgerufenen menschlichen Lungentuberkulose. [**Frequency of Bovine Type of Infection in Human Pulmonary TB.**]—*Klin. Wschr.* **15.** 45-46. [9 refs.]

II. HEYMER, A. (1937). Erkrankung durch Typus bovinus. [**Bovine Type TB. in Two Men**].—*Münch. med. Wschr.* **84.** 58-59. 4 figs. [13 refs.]

I. Bovine type infection was found in six out of 118 cases of pulmonary TB. in human beings, two cases being in infants, two in adults and two in elderly people; the four last mentioned were farm workers.

II. These are case records of cervical TB. of identical form in two brothers who had drunk raw milk from a tuberculous cow. Bovine type infection was verified bacteriologically.—J. E.

GOYAL, R. K. (1936). **Study of pH of a New Type of Acido-Resistant Bacillus Parasitic to the Guinea-Pig.**—*Tubercle, Lond.* **18.** 66-69. 2 tables. [6 refs.]

Certain strains of acid-fast bacilli isolated from normal g. pigs or from animals inoculated with innocuous material were grown on flasks of Sauton's medium. The final pH reaction of the fluid was influenced by the size of the flasks, the quantity of glycerin in the medium and the degree of disturbance of the pellicle during growth.—R. E. GLOVER.

EGEHØJ, J. (1938). Forandringer i det hvide blodbillede hos kaniner eksperimentelt inficerede med rødsygebakterier. [**The White Blood Picture of Rabbits Infected with** *Erysipelothrix rhusiopathiae*].—*Skand. VetTidskr.* **28.** 189-217. 3 tables, 11 graphs. [English summary].

Referring to his earlier work on mononuclear leucocytosis in pigs with swine erysipelas [*V. B.* **8.** 342.], E. reports his further studies on the same subject in rabbits experimentally infected with *E.r.* His findings in the rabbit are in close accordance with the quantitative and qualitative changes in the white blood picture found in the pig.—GUSTAV NAERLAND (OSLO).

PATERSON, J. S., & HEATLEY, T. G. (1938). **A Case of Infection of the Horse with Erysipelothrix rhusiopathiae (Swine Erysipelas).**—*Vet. J.* **94.** 33-34. [5 refs.]

The authors report a case of natural infection with *E.r.* in a filly. The clinical

symptoms were, at first, shoulder lameness, then a painful and swollen hock, with fever, rapid pulse and capricious appetite, followed by swollen fetlocks, stiffness and difficulty in rising. A typical verrucose endocarditis of the mitral valves, with cauliflower vegetations, was found P.M. Bacteriological and cultural examination are described.—E. E. JELBART.

SCHOFIELD, F. W. (1937). **Acute Fatal Rhinitis in Calves (Due to Corynebacterium Pyogenes).**—*Rep. Ont. Vet. Coll., 1936.* pp. 17-18. 1 fig.

Two calves in a herd of Jersey cattle showed symptoms of the disease when ten days old, and were near death a few days later. Autopsies showed accumulation of pus in the medial turbinates, diphtheritic membranes, and congestion and necrosis. Pure cultures of *C.p.* were obtained from each case.—E. A. WATSON.

ERWIN, L. E., DELAPLANE, J. P., & STUART, H. O. (1937). **Shigella nasalis n. sp., a Secondary Invader of the Nasal Passages of Chickens.**—*J. Amer. vet. med. Ass.* **91.** 317-322. 1 fig. [2 refs.]

The authors have isolated a new species of shigella from the upper respiratory passages of poultry with an affection of the nasal sinuses; the passages tended to become plugged with exudate, and there was lachrymation, the discharge tending to gum the eyelids together.

Aerobic growth on agar was smooth, whitish-grey, slightly raised and translucent. The organism produced no change in litmus milk, but reduced nitrates. Indol was formed, and also hydrogen sulphide. Acid was generally produced from fermentable substances, but no gas.

S.n. was isolated from the lesions, and when inoculated into the nasal passages of healthy fowls together with *Haemophilus gallinarum* they set up typical disease, but were non-pathogenic when given alone. If inoculated (subcut.) marked local swellings occurred. When nasal exudate was inoculated into the cloaca in the manner used for laryngotracheitis vaccination a reaction similar to that caused by the latter procedure was produced, and occasionally the infection led to a fatal peritonitis. Pure cultures produced a similar cloacal reaction which differentiates them from *H.g.* The primary inciting agent of the disease was not determined.—C. V. WATKINS.

BASSET, J. (1938). Pasteurellose du porc (pneumonie dite contagieuse du porc). Etude expérimentale étiologique et immunologique. Les pasteurellas: classification et pathologie générale. [**Swine Plague. With a General Discussion on the Pasteurella Group, Including** *Past. pseudotuberculosis*]. —*Rev. Méd. vét., Toulouse.* **90.** 65-99. 4 figs. on 4 plates, 9 graphs. [9 refs.]

A strain of *Past. suiseptica* isolated from a piglet dead of acute pleuropneumonia was shown to be almost non-pathogenic for experimental pigs, in contrast with a strain of *Past. aviseptica*. Comparative experimental results with both strains led B. to the opinion that, apart from host susceptibility, the pathogenicity of pasteurella strains for a given animal species depends, not upon animal origin, but upon the virulence of the individual culture. This opinion was supported by the finding that pigs could be immunized almost equally well against the injection of a lethal dose of *Past. aviseptica* by instilling a culture of either *Past. aviseptica* or *suiseptica* into the nasopharynx. The wide variation in the pathogenicity of pasteurella strains to the same animal species is considered by the author to correspond with the difference in pathogenic power of the so-called *Pasteurella* species named according to the animal of origin. He therefore proposes to include them all in the species *Past. veterinaria*.

The article concludes with analogies between *Past. pseudotuberculosis rodentium* and the other pasteurellas.—R. O. Muir.

Shanks, P. L., & Lamont, H. G. (1938). **Swine Paratyphoid in Northern Ireland.**—*Vet. Rec.* **50.** 249-254. 1 table. [2 refs.]

Salmonella cholerae-suis var. *kunzendorf* was isolated from a number of outbreaks of swine paratyphoid in Northern Ireland. The authors differentiate five types :– Type I, a septicaemic form with skin discoloration, found in sucking pigs, but not common ; Type II, the necrotic enteritis form affecting pigs 8-12 weeks old, the organism being found in the lesions and sometimes in the liver ; Type III, a pneumonic form sometimes accompanied by necrotic enteritis, affecting pigs 16-24 weeks old, the organism being present in " all organs " ; Type IV, a peracute septicaemic form with numerous petechiae, the organism being recovered from " all organs ", and Type V, a " skin-rash " form with enlargement of subcutaneous lymph nodes and sometimes pneumonia, the organism again being present in " all organs ".

Attempts at transmission by inoculation and feeding of pigs with cultures and infected organs gave irregular results. Attempts at vaccination were unsatisfactory and seemed to protect piglets only when they were past the sucking stage.
—D. Slavin.

Beaudette, F. R. (1938). **Localized Pullorum Infection in the Ovary of a Duck.**—*J. Amer. vet. med. Ass.* **92.** 100-101. [1 ref.]

B. describes the P.M. findings in a two-year-old Muscovy duck, which died suddenly. The liver was mottled, and there was a necrotic patch on the wall of the gizzard and catarrhal inflammation of the duodenum. *Salmonella pullorum* was isolated from a caseous ovum attached to the ovary by a thin stalk.—D. L. H.

Barto, L. R. (1938). **A Hemolytic Strain of Salmonella Enteritidis from a Dog.**—*J. Amer. vet. med. Ass.* **92.** 207-209.

B. records a case of enteritis in an elkhound. Bacteriological examination of the organs showed a haemolytic strain of *S.e.* The animal had shown a " secondary anaemia " a year previously and B. attempts to relate this to a latent infection with *S.e.*—D. Slavin.

Khalil, A. M. (1938). **The Incidence of Organisms of the Salmonella Group in Wild Rats and Mice in Liverpool.**—*J. Hyg., Camb.* **38.** 75-78. 3 tables. [11 refs.]

Organisms of the salmonella group were isolated from 7·3% of 750 wild rats trapped in Liverpool. Cultures were made from the liver, spleen and intestine in tetrathionate broth, and then on to brilliant green-eosin agar. *S. enteritidis* was isolated from 24 rats, *S. typhi-murium* from 27, *S. newport* was obtained from three, and *S. thompson* from one.

The incidence of these infections was greatest in the winter. No organisms of the group were obtained from mice, but examination of the latter was only carried out in the summer.—D. L. Hughes.

Edwards, P. R. (1938). **Further Studies on IV-Variants of Salmonella Typhi-Murium (Aertrycke) with Special Reference to Cultures from Pigeons.**—*J. Bact.* **35.** 123-128. [12 refs.]

[IV-Variant is a term given to strains of this organism which lack somatic Factor V ; their antigenic structure is IV. XII. i : 1, 2, 3].

Following on his isolation of IV-Variants of *S.t.-m.* from pigeons, E. analysed

the antigenic structure of numerous strains from various animals. No IV-Variants were found except in cultures from pigeons and rabbits. The rabbits contracted infection from the pigeons [*V. B.* **8.** 270]. The following conclusion was drawn :– " The occurrence of IV-Variants of *S. typhi-murium* in food poisoning indicates that the infection was contracted directly or indirectly from pigeons."—D. L. H.

BALTZAN, D. M. (1937). **Experience with Fifty-Seven Brucellosis Infections in Saskatchewan.**—*Canad. med. Ass. J.* **36.** 258-262. 2 tables. [6 refs.]

This report discusses laboratory diagnostic tests in relation to clinical evidence. Fifty-seven cases of brucellosis in man, seven acute and 50 chronic, " were positive clinically and serologically ". For each of the acute cases, clinical signs and their frequency are listed. The chronic cases are divided into four clinical groups according to the special predilection for infection. Evidence as to how long such infection may have existed is lacking. Laboratory reports should be correlated with the individual case, and the final diagnosis should be based on combined evidence and clinical findings.—E. A. WATSON.

I. WIGHT, A. E. (1938). **Accomplishments of Federal-State Bang's Disease Project.**—*J. Amer. vet. med. Ass.* **92.** 264-269.

II. HILL, C. L. (1938). **What Does the Cattle Breeder Think About the Control of Bang's Disease ?**—*Ibid.* 269-279.

III. DEFOSSET, A. J. (1938). **Problems Arising in the Federal-State Bang's Disease Project.**—*Ibid.* 279-289.

IV. —. (1938). **Report of the Committee on Bang's Disease [U.S. Live Stock Sanit. Ass.]**—*Ibid.* 301-307.

I. Considerable progress was made during the year. Some 802 thousand herds, containing approximately 8,200,000 cattle, are now under supervision. In three States this comprises more than 50% of the breeding cattle and the average for the whole country is 15·4%. Reactors amounted to 5% of the total cattle under test. A scale of compensation for reactors is allowed by the Federal Government and the owner receives the salvage. Additional sums are also paid in a number of States. The incidence of the disease was found in the initial testing to average about 14%, but it exists in practically every locality where cattle are maintained. Controlled experiments on the value of vaccines are being conducted at Experiment Stations and in the field, on calves 5-7 months old. These animals are located in herds in which the infection in adult cattle is at least 15%. About five thousand calves were vaccinated in some 285 herds located in 25 different States. Publicity on control measures was given by press and radio.

II. A cattle breeder of long experience gives his views on the effects of contagious abortion in a herd and the value of elimination of the disease by control measures. The farmers of Wisconsin now realize that an effective method of eradicating abortion is available. Practical experiences with so-called remedies and their complete failure are described. Records of a pure-bred herd in which the disease had been eradicated are quoted, and show an average of 1·25 services per calf as against a previous figure of five services, and a 90% calf crop against 50%. Vaccination experiments are alluded to and it is pointed out that two years must elapse before positive animals can be replaced by vaccinated heifers, and that the immunity of such animals is still problematical.

III. The purpose of this plan, which has now been in operation as a co-operative Federal and State measure for more than three years, is the eradication of abortion disease from herds and thereafter maintenance of the herds free from

infection. The necessity of full co-operation of the owners of herds who subscribe to an agreement is fully recognized.

A review of reports received from the several States tabulates the difficulties encountered in control work as they occur in different parts of the country. The low titre reactor in both negative and positive herds is a problem of general importance. Other difficulties are shown under the following headings :– (1) lack of co-operation and indifference to sanitation on the part of the owner ; (2) the provision of additions or of replacement cattle ; (3) the presence of suspects ; (4) difficulties of making owners understand certain conditions ; (5) interference in project due to use of vaccine and abortion cures, and (6) difficulty of making retests at proper intervals.

IV. Steady progress was made during the year. Thirty-five States now require that breeding and dairy cattle should either come from disease-free herds or prove negative to blood tests prior to entry. Seventeen States have partial or complete area-testing programmes, 33 require that reactors should be marked by branding or tagging, and ten have an indemnity fund for animals condemned.

Vaccination experiments on a large scale are being made, but definite findings are not yet available. There is, however, an increasing tendency for cities, municipalities, and villages to require that cattle producing their milk supply should be negative to the agglutination test. Public sentiment is rapidly being moulded in favour of complete eradication. Considerable improvement in plate antigens has been effected by the Bureau of Animal Industry as well as by laboratories of other organizations.—S. J. GILBERT.

I. TUTT, J. F. D. (1937). **Bovine Contagious Abortion : Duration of Reaction to Living Vaccine.**—*Vet. Rec.* **49.** 1313.

II. DEMNITZ, A. (1938). Ueber avirulente durch Züchtung auf Galle-Nahrboden erhaltene Abortus-Bang-Kulturen und ihre Verwendungsmöglichkeit zur Immunisierung.—[**Avirulent Cultures of** *Brucella abortus* **Produced by Growth on Bile Media; their Possibilities in Vaccination**].—*Dtsch. tierärztl. Wschr.* **46.** 122.

III. VELU, H., & ZOTTNER, G. (1938). La prémunition contre la maladie de Bang par les cultures vivantes de Brucella abortus est-elle possible sans être dangereuse ? [**Premunition against Bovine Brucellosis by Live Vaccine**].—*Maroc méd.* **18.** 51-55. 2 tables. [3 refs.]

IV. HARING, C. M. (1938). **Vaccination against Bang's Disease in an Infected Dairy Herd with United States Bureau of Animal Industry Brucella Abortus Strain 19.**—*J. Amer. vet. med. Ass.* **92.** 52-60. 2 figs., 1 table. [4 refs.]

I. A discussion based on clinical experience of the persistence of the agglutination reaction after inoculation with live vaccine.

II. The object of D's work was to produce a non-pathogenic strain of *Br.a.* which would be able to live and multiply and produce antibodies in the host. A strain was attenuated by passage through bile media. At the 76th or 77th passage, loss of virulence had not been obtained, but after the 159th and up to the 326th passage, the culture was incapable of producing the disease in g. pigs and mice, though causing enlargement of the spleen, and no lasting immunity resulted. In a succession of cases, however, a protective influence persisted up to seven months. When used on cattle it did not cause abortion ; a low grade only of agglutination reaction was produced and no organisms were excreted from the host ; on the other hand they rendered the cattle entirely immune to an artificial infection which in controls caused abortion associated with the excretion of brucella. The experiments are to be continued on a larger scale.

III. The persistence of the local vaccinal reaction and the indication of the presence of antibodies given by the allergic and serological tests in the following four groups of cattle are discussed :– (1) 20 cows which had been vaccinated four times 16 months previously with live *Br.a.* in a non-absorbable excipient; (2) seven heifers which had received one dose of the same vaccine 16 months before the investigation; (3) 24 cows similarly vaccinated two years previously, and (4) 13 animals presumably free from the disease.

It is concluded that the agglutination reaction with unheated emulsion is the most reliable test, and that the next in reliability is the intradermal test with Mirri's brucellin. From the results it is deduced that a single injection of 4 mg. of living *Br.a.* enclosed in a non-absorbable or slowly absorbable excipient produced a lasting state of allergy and immunity.

IV. The principal purpose of this paper is to report some effects of the use of Cotton, Buck and Smith's strain 19 of *Br.a.* [*V. B.* **5.** 119 and 196.] in an isolated, self-contained dairy herd in California in which 50% of the cows were infected. In a period of four years 93 heifers and four cows were vaccinated with 100-300 billion living organisms. The immediate effect on the heifers was the exhibition of pyrexia, anorexia and malaise lasting up to three days, and on the cows a sharp drop in lactation which in some cases lasted for two weeks. No apparent injury resulted from the vaccination of three heifers between the third and fifth months of pregnancy, but in a cow in the last stages of gestation it produced typical brucellosis and death of the foetus.

Although the vaccinated animals were in contact with healthy unvaccinated cows, the latter did not become infected with strain 19, but later, as cows, 9 of the former became infected with virulent *Br.a.*

Apparently the ultimate effect of the vaccination on the herd over a period of four years has been a marked reduction in the number of infected individuals.

—G. WILLIAMSON.

KRÜGER. (1937). Die Bruzellose der Pferde. [**Equine Brucellosis**].—*Dtsch. tierärztl. Wschr.* **45.** 182-186 and 198-201. 2 figs. [Numerous refs.]

K. concludes that the lowest agglutination titre which should be taken as indicative of brucellosis in equines is 1 : 200. He bases his conclusions on the following facts :– (1) Of 100 normal army horses, 25 were negative at 1 : 50, 49 had a titre of 1 : 50, and 26 a titre of 1 : 100. (2) Of 60 surgical cases, other than poll evil or fistulous withers, 12 were negative, 24 had a titre of 1 : 50 and 19 a titre of 1 : 100, whilst the remaining five had titres ranging from 1 : 500 to 1 : 10,000. All five of the latter animals had joint or bone lesions, and in the case of three the lesions were accepted as due to *Brucella abortus*. (3) Of 15 cases of poll evil or fistulous withers, seven had titres of 1 : 50 or under whilst the remaining eight had titres ranging from 1 : 1,000 to 1 : 10,000. (4) Of 16 horses which have been artificially infected by various workers, including two by K. himself, five developed titres of 1 : 400 or 1 : 500 and 11, titres of 1 : 1,000 or over.

The view is taken that brucellosis cannot yet be accepted as the primary cause of the conditions under consideration, that trauma plays a part, and that trauma lesions are not especially likely to be secondarily infected with brucella. K. notes that in horses which have already been in the army for a few years, fistulous withers or poll evil are seldom due to brucella. Most of his positive cases had come from farms on which contagious abortion was known to exist. He records marked reactions to brucellin injected by the conjunctival and intradermal routes, and to formalinized culture subcutaneously, and contrasts this with the difficulty he has found in demonstrating the causal organism by cultural tests or g. pig inoculation, concluding that equine brucellosis is a condition in which allergy is marked.

Two horses which K. infected *per os* both showed a definite rise of temperature at the fifth day, followed at once by a steep rise in the blood aggl. titre, which reached its peak at 15 days and then dropped more or less quickly.—A. W. S.

Scorgie, N. J. (1938). **Infection of Mice with *Brucella abortus* of Bovine Origin.** —*J. Path. Bact.* **46.** 165-171. 4 tables. [11 refs.]

The relative susceptibility of mice and g. pigs to infection with *Br.a.* was tested by inoculation of cultures of the organism or of naturally infected milk.

In a total of 213 mice injected with graded doses of *Br.a.*, the smallest number of organisms which resulted in infection was 280×10^2. The largest dose employed —810×10^6 organisms—did not result in infection of all the mice in the group. In g. pigs, a dose as small as 28-280 organisms was capable of producing infection in six out of nine animals.

In 30 mice inoculated with naturally infected milk, recovery of the organism was successful in only three animals; the organism was recovered from 17 out of 18 guinea pigs receiving the same samples.

In the light of these results it is clearly undesirable to replace g. pigs by mice for the isolation of *Br.a.* from naturally infected material.—E. G. White.

I. Pop, A., Damboviceanu, A., Barber, Cella, & Marinov, I. (1938). Antigène complet des *Brucella*. Propriétés biologiques. [**The Biological Properties of the Complete Antigen of Brucella**].—*C. R. Soc. Biol. Paris.* **127.** 733-736. [5 refs.]

II. Damboviceanu, A., Barber, Cella, Pop, A., & Marinov, I. (1938). Antigène complet des *Brucella*. Caractères chimiques. [**Chemical Nature of the Complete Antigen of Brucella**].—*Ibid.* 736-738. [See also *V. B.* **7.** 187 and 288].

III. Vanghelovici, M., Damboviceanu, A., Barber, Cella, & Pop, A. (1938). Antigène complet des *Brucella*. Analyse microchimique. [**Microchemical Analysis of the Complete Antigen of Brucella**].—*Ibid.* 738-740. [See also *V.B.* **7.** 187 and 288].

I. The complete antigens extracted from *Br. abortus, Br. melitensis* and *Br. abortus* (porcine type) proved toxic to mice but not to g. pigs. They also gave very marked precipitation reactions with brucella antisera prepared in rabbits, homologous sera giving the highest titres. The extracts were also good antigens and the serum of rabbits injected with them contained both agglutinins and precipitins. When injected intradermally into rabbits and g. pigs previously sensitized by injections of cultures, marked allergic reactions resulted.

II & III. Chemical and microchemical studies both showed that, in complete brucella extracts, polysaccharides, higher fatty acids and substances of a lipoid nature containing nitrogen and ash could be demonstrated. Complete details of the methods employed and the proportions of the various substances present in each of the species are given.—Gwilym O. Davies.

Priestley, F. W. (1938). **An Attempt to Demonstrate a Labile Antigen in *Br. abortus*.**—*Vet. Rec.* **50.** 137-139. [Numerous refs.]

In this investigation P. absorbed immune sera, prepared in various species of animals, with heavy doses of killed organisms so that all somatic antibody was removed. The absorbed serum was then tested for any residual antigen which might combine with a suspension of living organisms. Some *Br.a.* suspensions used for absorption were killed by heat; others were treated with phenol, formalin or HCl, but in all cases the absorbed sera failed to reveal any unabsorbed labile

antigen. Thus P. concludes that any difference in the immunizing ability between living and dead *Br.a.* vaccines is not due to any difference in antigenic structure.
—Gwilym O. Davies.

Kaltenegger, A. (1937). Rauschbrandimpfungen mit pulverförmigem Impfstoff. [**A Blackleg Vaccine in Powder Form**].—*Wien. tierärztl. Mschr.* **24.** 206-207.

Gerlach [*V. B.* **7.** 542.], in discussing the blackleg vaccine issued by his laboratory at Mödling, stated that its use was largely empirical owing to the impossibility of standardizing the dose. K. here states that he has immunized more than 25 thousand head of cattle over several years with G's powdered vaccine and has only lost five animals from the effects of vaccination.

Immunization against blackleg with the above vaccine has rendered possible the keeping of cattle in certain mountainous districts.—P. S. Watts.

Frei, W., & Riedmüller, L. (1938). Gleichzeitige aktive Immunisierung gegen Rauschbrand und malignes Oedem mit abgetöteten Vollkulturen. [**Simultaneous Immunization against Blackleg and Malignant Oedema with Killed Cultures**].—*Berl. tierärztl. Wschr.* Jan. 28th. 45-49. 9 tables. [Num. refs.]

The authors recommend the use of a single injection of 5 c.c. of mixed formalinized whole cultures of *Clostridium chauvoei* and *Cl. septique* for the immunization of cattle against the two infections. Their preliminary work in g. pigs and sheep showed little difference between whole culture vaccines and others in the case of *Cl.c.*, but for *Cl.s.* the whole culture vaccines were definitely superior. In the field the mixed vaccine has been in use since 1934, and 6,054 animals have been vaccinated. None has contracted either disease, but it was not possible to ascertain the number of deaths in comparable herds.—P. S. Watts.

de Carolis, L. (1937). Su di un focolaio di paracarbonchio sintomatico. Contributo alla conoscenza degli edemi gassosi dei bovini. [**An Outbreak of Blackleg**].—*Profilassi.* **10.** 64-68. [10 refs.] [English, French and German summaries].

After discussing the significance of anaerobic infections in animals, the author records some typical cases of blackleg in cattle. The disease was successfully controlled by the use of the serum-vaccine method of Leclainche and Vallée.
—J. A. Nicholson.

DISEASES CAUSED BY PROTOZOAN PARASITES.

Shortt, H. E., Pandit, S. R., & Menon, K. P. (1938). **The Absence of Effective Immunity After Cure of Protozoal Infections.**—*Indian. J. med. Res.* **25.** 763-777. 3 tables. [3 refs.]

Carefully planned and well controlled experiments using *Babesia canis*, *Plasmodium knowlesi* and *P. cynomolgi* were carried out to investigate whether any form of immunity exists in cured animals or in those harbouring a latent or low-grade non-clinical infection.

No evidence of any degree of immunity was demonstrable in any infected animal which had been cured by sterilizing its blood of all parasites. On the other hand, it was shown clearly that immunity exists only if the host harbours parasites within its body.—H. S. Purchase.

Poursines, Y., Soulié, P., & Pigoury. (1937). Expérimentation sur l'animal avec le virus de la trypanosomose equine de Syrie (variété du *T. evansi*). [**Animal Experiments with the Syrian Strain of** *Tryp. evansi* **from Horses**]. —*Bull. Soc. Path. exot.* **30.** 900-907.

Observations are recorded on the symptoms and lesions produced in dogs, rabbits, rats and g. pigs by a strain of *Tryp. evansi* isolated from a horse in Syria. In dogs the organism produced a subacute disease exhibiting remissions and characterized by intermittent fever, keratitis and posterior paralysis. In rabbits and g. pigs the disease was chronic, but whereas no local manifestations were produced in g. pigs, rabbits showed a skin reaction in which ulceration of the scrotal area occurred. In rats the disease was acute.

The histopathology consisted of proliferation of histocytes and endothelial cells in the spleen, nervous tissue and heart muscle, and degeneration of liver cells and of the tubular epithelium of the kidneys. Whilst the nervous system and cornea were affected in the dog, changes in these situations were absent in the small experimental animals.—U. F. Richardson.

Schmid, F. (1938). Trypanosomen bei einer milzbrandverdächtigen Kuh. [**Trypanosomes in a Case of Suspected Bovine Anthrax**].—*Munch. tierärztl. Wschr.* **89.** 25-26. 1 fig. [8 refs.]

S. records the detection of *Tryp. theileri* in blood and spleen smears taken from a cow in which anthrax infection had been suspected. The animal was slaughtered *in extremis* after the sudden onset of symptoms of great weakness and discharge of blood from the nose. Autopsy revealed intramuscular petechial haemorrhages, enlargement of the liver and slight enlargement of the spleen. Bacterial examination failed to reveal anthrax infection. Attention is drawn to four previous findings of trypanosome infection in similar circumstances.—U. F. R.

van Hoof, L., Henrard, C., & Peel, E. (1937). Rôle du porc comme réservoir de *Trypanosoma gambiense*. [**The Pig as Reservoir of** *Tryp. gambiense*]. — *C. R. Soc. Biol. Paris.* **126.** 1245-1248. [1 ref.]

The experimental infection of a human volunteer with a strain of *Tryp. gambiense* from pigs is here recorded. The strain had been passaged by tsetse transmission through four pigs, and the volunteer was infected by tsetse which had fed on the last pig. Passage through the pigs seemed slightly to increase the arsenic resistance of the trypanosomes, but the human infection yielded to treatment with Bayer 205.—U. F. Richardson.

Hoare, C. A. (1937). **On the Nomenclature of the Trypanosome Causing Acute Porcine Trypanosomiasis in Africa.**—*Bull. Soc. Path. exot.* **30.** 686-693. [18 refs.] [In English : French summary].

H., answering the contentions of Schwetz and Mesnil [*V. B.* **8.** 213.] that the name *Tryp. suis* has priority over the name *Tryp. simiae* for the trypanosome causing acute porcine trypanosomiasis, points out that under the " law of priority ", before a genus can be recognized as valid the name must be accompanied by an adequate " indication ", " definition ", or " description ", all of which are lacking in the case of *Tryp. suis* of Ochmann. In the case of *Tryp. simiae*, excellent figures and a full description were supplied by Bruce, and that he failed to describe its polymorphism does not invalidate the name *Tryp. simiae*, as the rules of zoological nomenclature lay down that the " law of priority " obtains when any part of an animal is named before the animal itself or when any stage in the life-history is named before the adult.—U. F. Richardson.

I. VAN HOOF, L., HENRARD, C., & PEEL, E. (1937). Sur le rôle du porc indigène comme réservoir de *Trypanosoma gambiense*. [**Swine as Reservoirs of** *Tryp. gambiense*].—*C. R. Soc. Biol. Paris.* **126.** 72-75. [8 refs.]

II. CURASSON, G. (1937). Les trypanosomiases virulentes du porc en Afrique. Observations personelles sur celle à *T. Brucei* en Afrique Occidentale francaise. [**Observations on** *Tryp. brucei* **Infection of Swine in French West Africa**].—*Rec. Méd. vét. exot.* **10.** 109-119. 2 figs. [14 refs.]

III. GILLAIN, J. (1937). Quel est le trypanosome de la trypanosomiase virulente des suidés au Congo Belge ? Que penser de Trypanosoma montgomeryi en tant qu'espèce ? [**Which is the Virulent** *Trypanosome* **of Swine ? Is** *Tryp. montgomeryi* **a True Species ?**]—*Ann. Soc. belge Méd. trop.* **17.** 219-228. [9 refs.] [See also *V. B.* **6.** 646 and 860, and **8.** 19 and 213].

I. The first article records observations on six pigs infected with *Tryp. gambiense*. The animals exhibited no symptoms of the infection, which they carried for several months. Only rare trypanosomes occurred in the blood, and these would have been overlooked but for careful search. Specimens of *Glossina palpalis*, fed on the pigs, developed an infection of the salivary glands. It is concluded that swine are an ideal reservoir host for *Tryp. gambiense*.

II. C. reviews the literature dealing with virulent outbreaks of porcine trypanosomiasis and points out that although it has been generally accepted that *Tryp. congolense* causes a mild chronic disease in swine, yet H. H. CURSON, in 1928 reported a virulent outbreak due to this trypanosome in South Africa.

Curasson discusses the susceptibility of swine to *Tryp. brucei* and accepts that *Tryp. suis*, as described by OCHMAN, was a trypanosome of the *Tryp. brucei* type. Although many investigators have failed to infect pigs experimentally with *Tryp. brucei*, natural outbreaks do occur, and one outbreak is described in which 500 animals died out of 800. The disease was of the chronic type characterized by progressive emaciation and posterior paralysis, and a small number of animals removed to the laboratory for observation recovered with improvement in feeding and hygienic conditions. There seems no doubt that the trypanosome concerned was *Tryp. brucei*. Later an acute trypanosomiasis was encountered in pigs, characterized by fever, dyspnoea and death in 2-4 days. In this case, however, the trypanosome also appeared to be *Tryp. brucei*, and, unlike *Tryp. simiae*, it was readily inoculable to dogs, rabbits, g. pigs and rats. It is suggested that, in the case of both *Tryp. congolense* and *Tryp. brucei*, the virulence to swine may be increased with passage, and that there is no necessity to recognize *Tryp. simiae* as a new species, as it can be considered synonymous with *Tryp. congolense*.

III. The polymorphism of the trypanosome associated with acute porcine trypanosomiasis is discussed and it is pointed out that the large majority of organisms encountered are of the *Tryp. simiae* type. The small number of organisms of the *Tryp. congolense* and *Tryp. rodhaini* type may be regarded as young forms occurring at a time of rapid multiplication. The significance of *Tryp. montgomeryi* is discussed, and it is suggested that this type of organism is always associated with *Tryp. congolense* or *Tryp. simiae* infections, occurring either in animals with chronic disease or in those at the point of death, and that it represents a stage in the production of " latent bodies ". Whether " latent bodies " represent an attempt by the organisms to produce resistant forms, or whether they represent trypanosomes in process of degeneration, is unknown.—U. F. RICHARDSON.

PIGOURY, L. (1937). Préparation, à partir du chien splénectomisé, d'un antigène applicable au diagnostic des trypanosomoses animales par déviation du complément. [**Preparation from Splenectomized Dogs of an Antigen for**

the Complement-Fixation Test in Trypanosomiasis].—*C. R. Soc. Biol. Paris.* **126.** 1186-1188. [2 refs.]

P. prepared antigen for the c.-f. test for dourine from splenectomized dogs inoculated with *Tryp. evansi*. He found that it was best to collect the blood when the trypanosomes numbered about 500,000 per c.mm. This severity of infection was reached in 10-12 days with the strain of trypanosome used. A dog weighing 12 kg. supplied about 500 c.c. of blood. The blood was centrifuged in an electric centrifuge at the lowest speed for 3-4 minutes, and the supernatant fluid decanted and allowed to stand. The trypanosomes were deposited as a sediment in about 12 hours, and were then prepared as an antigen by Zottner's method [*V. B.* **4.** 621]. 500 c.c. of blood gave 1 cg. of dried trypanosomes. It is claimed that preparation from the dog reduces hand manipulations to a minimum.—U. F. R.

I. Villela, E., & Dias, E. (1936). Estudo das ulceracoes produzidas pelo *Schizotrypanum cruzi* em animaes experimentalmente infectados. [**Skin Ulceration in Dogs Affected with Chagas' Disease**].—*9th Reun. Soc. argent. Pat. reg. N.* **1.** 184-201. 18 figs. [15 refs.]

II. Johnson, C. M., & de Rivas, C. T. (1936). La enfermedad de Chagas en Panamá. [**Chagas' Disease in Panama**].—*Ibid.* 245-251. 1 table. [8 refs.]

III. Mazza, S., Dias, E., & Romana, C. (1936). Ulceras cutáneas en perros inoculados por *S. cruzi* de raza tatu. [**Skin Ulcers in Dogs Inoculated with *Trypanosoma cruzi***].—*Ibid.* 306-322. 17 figs., 1 table.

IV. Mazza, S., & Jörg, M. E. (1936). Infección natural mortal por *S. cruzi* en cachorro de perro "Pila" de Jujuy. [**Natural Fatal Chagas' Disease in a Dog**].—*Ibid.* 365-411. 49 figs. [5 refs.]

V. Mazza, S. (1936). Frecuencia e importancia de la infección natural de perros y gatos por *S. cruzi* y cuestión de la herencia del mismo en los primeros animales. [**Natural Infection by *Tryp. cruzi* in Dogs and Cats**]. *Ibid.* 412-417. 1 table. [7 refs.]

I. Working with a strain of *Trypanosoma cruzi* isolated from a tortoise (*Dasypus*) and passaged through dogs, g. pigs and other animals, in all about 60 times, the authors inoculated six dogs subcutaneously. After about ten days the dogs developed necrotic lesions both at the site of injection and elsewhere, particularly at the level of joints of the limbs. Tissue destruction was marked and in some cases led to perforation of the abdominal and joint cavities. Death occurred 15-32 days after inoculation in all but one dog. The lesions are described in detail and are illustrated macro- and microscopically: they resemble those of cutaneous leishmaniasis. The multiplication forms of the parasite are present in abundance in the epithelial cells of the skin, and in the subcutaneous connective tissue.

II. Chagas' disease was first diagnosed in Panama in 1931, and is thought to be widely distributed, although the infection is not severe except in children.

Twenty-five puppies about eight weeks old were inoculated with a strain isolated from a monkey and a strain isolated from a fatal human case. One puppy inoculated directly from the human case showed trypanosomes in the peripheral blood the following day and died in 36 days. None of the others showed any symptoms, and none died.

III. A study of the histopathology of a single experimental dog inoculated (subcut.) with a tortoise strain of *Tryp. cruzi* in its 34th passage through laboratory animals. Ulceration appears to have been due to the settling of pyogenic bacteria in tissues already weakened by the trypanosomes rather than to the direct action of the latter. A special feature was the formation of giant cells containing numerous nuclei.

IV. A detailed discussion of the pathological changes induced by natural *Tryp. cruzi* infection of a half-grown dog with an acute infection. The dog was found in the province of Jujuy and was one of two in which blood examination for *Tryp. cruzi* was positive. It was taken for study and died the next day having shown symptoms resembling those of goitre (cutaneous oedema and xerophthalmia). On one eye a healed corneal ulcer (infection atrium ?) was found. The bulk of the article is an exhaustive and illustrated account of P.M. findings, for which the original should be consulted.

V. A pregnant bitch with a natural *Tryp. cruzi* infection was kept under observation in a cage covered with close-meshed wire which protected her against outside infection. Her blood contained *Tryp. cruzi* shortly before and at the time of parturition, when nine puppies were born. Seven survived their first week and were kept with their mother for two months, all being submitted to a weekly blood examination. All the puppies contracted infection from five weeks of age onwards and all died or were killed. The role of the mother's milk in transmitting infection is discussed, but no evidence of any value was obtained.

VAN HOOF, L., HENRARD, C., & PEEL, E. (1937). Guérisons spontaneés, état réfractaire et immunité des singes pour certains trypanosomes pathogènes. [**Spontaneous Recovery, Refractory State and Immunity in Monkeys to Certain Pathogenic Trypanosomes**].—*Bull. Soc. Path. exot.* **30.** 727-737. [8 refs.]

Observations are recorded on 12 monkeys infected with *Tryp. gambiense*, in the course of which it appeared that this trypanosome might cause a symptomless infection in the species *Cercocebus galeritus agilis*, and that these animals might prove refractory to further infection after natural recovery or successful treatment. In some cases such recovered animals resisted attempts to infect them with *Tryp. rhodesiense*. Evidence of recovery consisted of inability to detect infection microscopically for 18 months, and the failure to infect tsetse flies by feeding them on the animal.—U. F. RICHARDSON.

ANDREWS, J. (1938). **Self-Limitation and Resistance in *Trichomonas foetus* Infection in Cattle.**—*Amer. J. Hyg.* **27.** 149-154. [11 refs.]

Three heifers, one of which was pregnant, were injected intravaginally with material containing flagellates from an infected heifer. The pregnant heifer reacted severely and aborted 35 days later, after which no flagellates were found and it appeared normal. The second animal reacted in a similar manner ; infection lasted over $3\frac{1}{2}$ months and was followed by complete recovery. The third heifer showed no symptoms and no flagellates were recovered.—R. FISHER.

MARCHESI, F., CRAINZ, F., & SCAPATICCI, R. (1935). Ricerche sulle variazioni stagionali della leishmaniosi dei cani in Roma. [**Investigations on the Seasonal Variations of Canine Leishmaniasis in Rome**].—*Arch. ital. Sci. med. colon.* **16.** 805-812.

A total of 861 stray dogs in Rome were killed and examined for cutaneous leishmaniasis during 1933, and 18 positive cases were found (2·1%). None was found from December to March (inclusive) and most were found between September and November.—J. E.

CURASSON, G., SISSOKO, B., & LAURENCE. (1937). La leishmaniose canine à Dakar. [**Canine Leishmaniasis in Dakar, Senegal**].—*Bull. Soc. Path. exot.* **30.** 684-686.

Of 83 dogs examined in Dakar during March and April, five were affected

with leishmaniasis. Four of them exhibited clinical signs suggestive of the disease. The diagnostic value of the formol-gel, the lactogel and other sero-flocculation tests are discussed in relation to the investigation, and it is concluded that only the first was of use.—G. Williamson.

Chang, K. (1937). **Effects of Temperature on the Oocysts of Various Species of Eimeria (Coccidia, Protozoa).**—*Amer. J. Hyg.* **26.** 337-351. 3 figs., 1 table. [17 refs.]

C. tested the comparative resistance to the effect of heat of unsporulated oocysts of *E. nieschulzi*, *E. miyairii* and *E. separata* from rats, *E. tenella* from chickens, and *E. arloingi*, *E. faurei* and *E. nina-kohl-yakimovi* from lambs. *E. arloingi* (the most resistant species) withstood 40 times the length of exposure at 46°C. necessary to effect a 50% mortality, as judged by later sporulation, than did *E. separata*. Such differences had no correlation with the thickness of the oocyst wall, which suggested that the reason was physiological rather than morphological.

Oocysts of *E. nieschulzi* from rats fed for nine days on a diet deficient in vitamins B and G were much more susceptible to heat than those from normally fed hosts. Such avitaminized hosts also caused a greater natural mortality of these oocysts than was found with oocysts from normally fed rats. However, neither starvation of the rats nor the addition of vitamins B and G to their normal diet had any effect on the tolerance of the oocysts of *E. nieschulzi* to heat.—C. V. W.

Yazdi-Zadeh, M. (1935). Les piroplasmoses. Etude et project de prophylaxie des piroplasmoses des animaux domestiques en Iran. [**Piroplasmosis—Control in Iran**].—*Thesis, Alfort.* pp. 98. 12 figs. [Numerous refs.]

This thesis is a general survey of the parasites of the suborder Piroplasmidae and the diseases they produce. The author places great importance on splenectomy in the study of the parasites. He also favours puncture of the liver, spleen and lymph nodes for obtaining material for examination. [Each parasite is discussed, but the statement that *Theileria annulata* is synonymous with *Anaplasma marginale* is misleading].

Various therapeutic drugs are reviewed [acaprin (Bayer), a now widely used drug, is omitted]. The destruction of ticks by rotation of pastures, burning, etc., is discussed. Dipping is advised, although there is little mention of the very essential hand dressing required for complete eradication of the ticks.

Finally the author emphasizes the need for police measures to prevent the introduction of fresh diseases into Iran, where so far, apparently, only *Babesia ovis* and *Th. recondita* have been recognized.—H. S. Purchase.

Roberts, F. H. S. (1937). **A Note on the Occurrence of Enterohepatitis or "Blackhead" in Chickens.**—*Aust. vet. J.* **13.** 158-161. 3 figs. [2 refs.]

Blackhead, which is not uncommonly seen in turkeys in Australia, had not previously been recorded in chickens. R. encountered it in his experimental chickens when investigating the life-cycle of *Heterakis gallinae*. With few exceptions the birds were not severely affected clinically, although P.M. examination revealed heavy infestations. The lesions are described in some detail. Flagellated forms of the parasite were not found in the caecal discharges till 17 or 18 days after infection with the eggs of *H.g.*, but prior to their appearance a rounded, spherical and inactive form (Tyzzer's Form 2) was seen.—D. A. Gill.

ROUBAUD, E. (1937). Principes et possibilités de la prophylaxie animale du paludisme. [**Possibilities of Controlling Malaria by an Animal Barrier**].—*Arch. Inst. Pasteur Tunis.* **26.** 625-664. [11 refs.]

R. discusses the disappearance of malaria from many areas of Europe, the reasons for its persistence in certain areas, and the applicability of the principles concerned in malarial eradication in north Africa and Asia.

The main malarial mosquito of Europe and north Africa, *Anopheles maculipennis*, exhibits strains which vary slightly morphologically, and more distinctly physiologically and biologically. Hybridization between the strains occurs, but eventually the mosquito population reverts to the strain most favoured by local conditions. If conditions favour attacks on animals, zoophile strains develop and human malaria tends to disappear. Since certain strains only attack when inside buildings, then, in order to divert their attention to animals it is necessary that the animals be stabled, and that human habitations be rendered non-attractive by adequate ventilation. It is also necessary to control the amount of water available for breeding, or both the zoophile and anthropophile strains will survive. It appears that the anthropophile strains persist mostly in areas where the water is brackish and where the inhabitants, at certain seasons, camp in marshy areas where animals are scarce. It is these conditions which have led to the survival of malaria in parts of Portugal.

The process of changing an anthropophile mosquito population to a zoophile one is necessarily long, and in north Africa, though some progress is apparent in European settlements, the poor housing of the native population has prevented any general improvement. In the French Asiatic dependencies five principal species of *Anopheles* are concerned in malarial transmission, and some of these exhibit little inclination to feed on animals, but even here the stabling of animals near human habitations has seemed to deviate the mosquito population towards a zoophile type.—U. F. RICHARDSON.

DISEASES CAUSED BY VIRUSES.

BEDSON, S. P. (1937). **Some Reflections on Virus Immunity.**—*Proc. R. Soc. Med.* **31.** 59-68. [Numerous refs.]

A general and broad discussion of problems of virus immunity in which B. discusses the answers to certain posed questions—whether infection is necessary for the creation of active immunity, whether virus immunity is a pure tissue immunity, the mode of action of neutralizing antibody and the persistence of virus after recovery. B. concludes that virus immunity is not produced by similar mechanism in all virus diseases and immunity to any given virus is a problem in itself. Generalizations should be avoided.—H. E. BYWATER.

I. WILLEMS, R. (1938). De quelques moyens utilisés contre la fièvre aphteuse en Belgique. [**Foot and Mouth Disease Control in Belgium**].—*Ann. Méd. vét.* **83.** 157-163.

II. ANON. (1937). Belgique : Fièvre aphteuse. Immunisation. Avis aux vétérinaires traitants. [**Belgium : Instructions to Veterinarians on Immunization against F. & M. Disease**].—*Bull. Off. internat. Epiz.* **15.** 593-594.

III. GLORIEUX, E. (1938). Rapport sur les injections de sang formolé comme moyen préventif contre la fièvre aphteuse. [**Prevention of F. & M. Disease by Injections of Formolized Infected Blood**].—*Echo vét., Gembl.* **67.** 42-44. **1 table.**

I. F. & M. disease lately experienced in Belgium has been characterized by extreme infectivity and the frequency of secondary bacterial invasion. The virus was of type O. Routine sanitary measures were unable to check the spread of the disease and, as a supplement to them, efforts have been concentrated on the wide application of the following three methods of immunization :- (1) by formolized virus prepared from blood taken from an infected animal at the onset of high fever and, if possible, before the formation of vesicles, the blood being intimately mixed with 5% sodium citrate and formol and used not later than the 5th day after its preparation, in quantities of 20-50 c.c. ; (2) by the use of blood from an animal recovering from a severe, but uncomplicated form of the disease, taken 15-20 days after the appearance of vesicles, the passive immunity thus conferred being reinforced by an active immunity produced by infecting the patient while in its resistant state, and (3) by a method similar to (2), but using the serum instead of the whole blood. Full details of the technique of each method are given.

II. Describes the technique of the first and second methods of immunization referred to above.

III. Records the results following the use of formolized virus on 570 bovines on 48 farms. G. claims that the mortality was reduced from a rate of 10% to one of 2·5%.—G. Williamson.

I. Nakamura, J., & Wagatuma, S. (1937). **Complement-Fixation Reaction in Rinderpest. IV. Infection and the Reaction.**—*J. Jap. Soc. vet. Sci.* **16.** 314-331. 10 tables. [5 refs.] [In Japanese : abst. from English summary pp. 40-42 of pt. 2]. [See also *V. B.* **8.** 589].

II. Robles, M. M. (1937). **Comparative Resistance of Cattle and Carabaos to Rinderpest and its Relation to Immunization.**—*Philipp. J. anim. Indust.* **6.** 457-459. 1 table.

I. The authors carried out a series of complement-fixation tests using a preparation from lymph nodes of cattle that were being hyperimmunized, and also of cattle with natural infection. Negative reactions were obtained with lymph nodes taken during the incubation period. Strongly positive reactions were obtained with those taken from acute cases 48-72 hours after the onset of fever. Antigens were demonstrable until the death of the host. In cases running a comparatively long course, antigens disappeared from the nodes in a few days. In mild cases no antigens were demonstrable.

II. R. observed that among 31 cattle and 13 buffaloes given varying doses of virus in the course of routine vaccine preparation, 31% of the cattle merely developed a rise in temperature and recovered, whereas all the buffaloes developed severe clinical symptoms. He concludes that although the dose of virus used did not influence the course of the disease, and both the native cattle and carabaos appeared equally susceptible, their resistance varied greatly.—R. Fisher.

Dick, A. T. (1937). **A Note on the Pathogenicity of the Organism of Contagious Bovine Pleuro-Pneumonia for Goats.**—*J. Coun. sci. industr. Res. Aust.* **10.** 164-167. 1 table. [9 refs.]

D. records an experiment in which the pathogenicity of an ox serum broth culture for adult goats 12-18 months old was tested on a series of 25 animals. The smallest dose to produce a visible reaction to subcutaneous inoculation was 1 ml. of a 1 : 10 dilution of a three-day-old culture. The reaction consisted of an oedematous swelling at the site of inoculation and a rise in temperature. Such animals failed to show any further reaction when tested by subcutaneous injection of 0·5 ml. of a three-day-old culture given four weeks after the first. From a second

experiment D. concludes that when four-month-old goats are given injections of the same cultures there is no local or thermal reaction. He intends to examine further the limits of this age resistance.—T. S. Gregory.

I. Harvey, F. T., & Reid, J. (1938). **Suspected " Mad Itch " in Cattle** —*Vet. Rec.* **50.** 268-270. 1 table. [3 refs.]

II. Glover, R. E. (1938). **An Examination of Pig Sera for Neutralising Antibodies against the Virus of Aujeszky's Disease** [" **Mad Itch** "—" **Pseudo-Rabies**].—*Ibid.* 377-380. 3 tables. [4 refs.]

III. Hart, F. W. (1938). **Suspected Aujeszky's Disease (" Mad Itch ", "Pseudo-Rabies ") in Cattle.**—*Ibid.* 382-383.

I. The authors report the occurrence of suspected mad itch [Aujeszky's disease] affecting the tail parts in two of a batch of five yearling cattle in Cornwall. No circumstances to account for the origin of the malady were found, but the quarters had previously housed pigs. The symptoms and course of the disease are described, as well as the laboratory examination of the head and of the affected tail parts. Attempts to reproduce the disease experimentally failed in both large and small animals. A résumé of previously reported cases is given.

II. G. conducted controlled experiments on g. pigs and mice with the Hungarian strain of Aujeszky's disease virus, but found no evidence of neutralizing bodies in 50 samples of pig sera (each sample representing five pigs) collected from wide-spread districts of England. Shope's procedure [*V. B.* **6.** 130.] was adopted and the technique is detailed. Hormone broth pH 7·4 was found more satisfactory than normal saline solution for suspension of the virus-containing brain substance.

III. H. reports what he believes to have been four outbreaks of this disease involving six milch cows in the Enniskillen district of Ireland over a period of about 20 years. All died or were destroyed; one did live for ten days, but was paralysed. P.M. and bacteriological examinations yielded negative results. —E. E. Jelbart.

I. Habersang, F. (1937). Ist die infektiöse Anämie der Pferde ein unlösbares Problem für die Seuchenbekämpfung? [**Is the Problem of E.I.A. Insoluble ?**]—*Tierärztl. Mitt.* **18.** 755-758.

II. Haltenhoff, R. (1937). Ueber das Wesen der Botelhoschen Probe und ihre Brauchbarkeit für die Feststellung der ansteckenden Blutarmut der Einhufer. [**The Botelho Test for the Diagnosis of E.I.A.**]—*Z. InfektKr. Haustiere.* **52.** 44-50. 1 table. [14 refs.]

III. Holz. (1937). Zur Ermittlung des Verdachtes der ansteckenden Blutarmut an Schlachtpferden und Pferdeleichen mit Hilfe der Schwefelammon-Methode. [**The Ammonium Sulphide Method of Diagnosis of E.I.A.**].—*Berl. tierärztl. Wschr.* July 23rd. 460-461. 1 fig.

I. A discussion on E.I.A. from the point of view of the practitioner. H. regrets that no progress in the control of this disease has been made in the last 20 years, and stresses the importance of discovering a reliable diagnostic method. He believes that the disease is more prevalent in Germany than official reports indicate. Transmission is chiefly by blood and body fluids, and biting flies are thought to be important in wooded areas. Control measures are discussed in full and it is urged that everything should be done to exclude the importation of affected horses, that the disease should be made notifiable, that suspected horses should be branded and that eradication should be undertaken by individual districts. Affected horses may be usefully employed in heavily infected districts and in mountainous regions where they have little chance to infect healthy horses.

II. The Botelho reaction, which has been used for some years in the diagnosis of cancer in human beings, consists of the property of the blood serum to form a precipitate on the addition of potassium iodide and citric acid. The test is not specific, but depends on the presence of protein decomposition bodies in the blood. H. carried out numerous tests on healthy horses and those affected with E.I.A. and found it to be of no specific value.

III. H. claims that the following is a useful and rapid method of diagnosis; it has been officially ordered at all knackeries in Wurttemberg. A piece of the liver is cut out and on it is poured a freshly prepared solution of liquor ammonii hydrosulfurati. In positive cases the cut surface becomes black immediately, due to the presence of haemosiderin, which is present in E.I.A. The method can be carried out both macroscopically and microscopically. The test is not strictly specific for E.I.A., but in practice it is sufficiently valuable to be adopted for diagnostic purposes.—F. Freudenberg (Hamburg).

le Chuiton, F., Mistral, C., & Dubreuil, J. (1938). Essais de vaccination du porc avec le virus de la peste porcine passé par cobaye. Perte de virulence rapide pour le porc et aussi du pouvoir antigenique vis-à-vis du virus porcin original. [**Immunization of Swine with the Virus of Swine Fever Passaged through Guinea Pigs with Resultant Rapid Loss of Virulence for Swine and Decrease in Antigenicity**].—*C. R. Acad. Sci., Paris.* **206.** 1837-1839. [1 ref.]

S.F. virus transferred to the g. pig by intratesticular inoculation becomes attenuated for the pig especially after the fifth day, the degree of modification depending upon the length of time elapsing after the injection of the virus. A series of pigs were injected, firstly with a highly attenuated g. pig virus and subsequently with successive doses of increasing virulence. No appreciable immunity was induced, since in every instance the animals, when tested with the standard porcine strain, succumbed within the same period as unprotected controls. —R. E. Glover.

Hell, H. (1937). **Early Research and Present-Day Problems in Hog Cholera Immunization.**—*J. Amer. vet. med. Ass.* **91.** 544-550.

The causes of the break down in immunity amongst pig herds in the corn belt of the U.S.A. following serum-virus treatment are attributed by H. to various factors, considered in turn. In his opinion, serum-virus treatment results in a leucopenia which weakens the defences of the body against secondary invaders normally resisted by the pig. *Pasteurella suiseptica* is regarded as of secondary importance to the more consistently virulent *Salmonella cholerae-suis*. H. recommends that all virus for immunization purposes should be tested for bacterial contamination and standard of virulence before acceptance into inter-state commerce.—R. O. Muir.

Levaditi, C., Bridré, J., & Krassnoff, Denise. (1938). Dimensions approximatives du virus de la clavelée, déterminées par l'ultrafiltration. [**Determination of the Size of Sheep Pox Virus Particles by Ultrafiltration**].—*C. R. Acad. Sci., Paris.* **206.** 953-954. [4 refs.]

Ultrafiltration experiments were undertaken with two strains of sheep pox virus suspended in Hartley's broth, using collodion discs of the Elford type. The filtrates were tested intradermally on sheep. The particle size of the more potent virus lay between 170-260 $m\mu$ while the less virulent strain was somewhat larger, lying between 250-380 $m\mu$.—R. E. Glover.

LADEWIG, P. (1937). Beiträge zur Kenntnis des Shopschen Cottontail-Kaninchen-Papilloms und seines filtrierbaren " Erregers ". I. Das Verhalten des filtrierbaren " Erregers " gegen Röntgenstrahlen. [**The Filtrable Virus of Shope's Rabbit Papilloma. I. Resistance to X-Rays**].—*Virchows Arch.* **298.** 636-639. 1 fig. [7 refs.]

Samples of " virus fluid " [*V. B.* **5.** 274.] were first subjected to the action of X-rays in dosages of 1,000, 3,000, 8,000, 10,000 and 20,000 r and were then inoculated into test rabbits, controls also being used. The results appeared to show that the virus was attenuated by the doses of 3,000 r and 20,000 r, but not appreciably by the other doses. L. states that this is a preliminary result which may have been affected by non-specific factors, such as heat: the work is being continued.—J. E.

FINDLAY, G. M., MACKENZIE, R. D., & STERN, Ruby O. (1937). **The Histopathology of Fowl Pest.**—*J. Path. Bact.* **45.** 589-596. 8 text figs., 20 figs. on 3 plates, 1 table. [13 refs.]

The histological lesions produced in rhesus monkeys, ferrets, hedgehogs, pigeons and ducks artificially infected with fowl pest virus are described and the changes compared with those found in the hen, mouse and rat. The virus causes lesions in tissues derived from all three embryonic layers and must, therefore, be classed among the group of pantropic viruses which include yellow fever, Rift Valley fever, dengue, equine encephalomyelitis and horse-sickness.

Apart from meningo-encephalomyelitis, changes are found in the liver, lungs, spleen, lymph nodes, kidneys and alimentary canal. Characteristic intranuclear inclusions are found in the central nervous system of all susceptible species and in the livers of the ferret, hedgehog, pigeon, duck, hen and canary. As in yellow fever, Rift Valley fever, and horse-sickness, the curious hyaline change in the cytoplasm of the liver cells known as the Councilman lesion may be produced.

The most striking macroscopic lesions are broncho-pneumonia, especially in the ferret, and haemorrhage in the alimentary tract. Fowl pest virus differs from the other viruses of this group in one respect, namely in its tendency to produce broncho-pneumonic changes not only in the ferret, but in such widely different species as the rhesus monkey, hedgehog and duck.—R. F. GORDON.

I. WILCKE, H. L., LEE, C. D., & MURRAY, C. (1938). **Susceptibility and Resistance of Some Strains of Chickens to Fowl Leucosis.**—*Poult. Sci.* **17.** 58-66. 2 figs., 6 tables. [8 refs.]

II. BUTLER, W. J., & WARREN, D. M. (1938). **Fowl Leukemia and Vitamin E. A Preliminary Report.**—*J. Amer. vet. med. Ass.* **92.** 204-206. [5 refs.]

I. The authors, after statistical analysis of their experiments on the transmission of fowl leucosis by inoculation and contact, concluded that resistant and susceptible strains of birds may be produced by selective breeding. They also found that the causative agent of fowl leucosis was extremely virulent in susceptible strains. The progeny of individual hens vary in their resistance or susceptibility.

II. The authors quote the work of ADAMSTONE (1936) and EVANS and BURR (1927) who showed the relation of vitamin E to mesoblastic tissue and hatchability. As lymphatic tissue is mesoblastic in origin they treated cases of leucaemia with intramuscular injections of wheat germ oil. [There is some confusion in the text between the terms leucaemia and fowl paralysis].

About a thousand birds were treated, and the authors claim to have noted quick recoveries, the blood picture returning to normal. There was some evidence that wheat germ oil prevented leucaemia.—D. L. HUGHES.

Dochez, A. R., Mills, K. C., & Mulliken, B. (1937). **A Virus Disease of Swiss Mice Transmissible by Intranasal Inoculation.**—*Proc. Soc. exp. Biol., N.Y.* **36.** 683-686. [3 refs.]

During the course of an investigation into the infectivity of the common cold for mice, a new virus was noted in stocks of mice obtained from three Swiss sources. The virus produced pulmonary lesions of an influenzal type after intranasal instillation, resulting in a high mortality with death in 24-48 hours. The virus was also pathogenic for the ferret and the rabbit. It induced no obvious lesions except when introduced by the intranasal route.—R. E. Glover.

PARASITES IN RELATION TO DISEASE [ARTHROPODS].

I. Mackerras, I. M. (1937). **Sheep Blowfly Investigations: Some Further Observations on the Mules Operation.**—*J. Coun. sci. industr. Res. Aust.* **10.** 96-100. 2 tables. [4 refs.] [See also *V. B.* **6.** 522].

II. Carter, H. B., & Belschner, H. G. (1937). **Some Observations on Blowfly Strike and Lambing among A- and C-Type Merino Ewes.**—*Aust. vet. J.* **13.** 191-199. 3 figs., 4 tables. [4 refs.]

I. Additional evidence is advanced to show that the breech conformation of merino sheep is greatly improved and the strike incidence is greatly reduced by the surgical removal of the inner breech fold (the Mules operation). The evidence collected is derived from trials conducted under supervision on six properties, two of which were official experiment stations. The results are considered from two main points of view :– (1) the effect of the operation in rendering a wrinkly breech comparatively plain, and (2) the effect on the incidence of breech strikes. M. concludes that the operation, if conducted in a wrinkly flock, can be expected to reduce the breech strike incidence to less than half and is, therefore, of great benefit, but whether the elimination of breech folds can best be achieved by surgical removal or by breeding them out is left an open question.

II. The observations extended over two years on two properties in New South Wales, and embraced 391 stud merino ewes that were grouped into A-types, *i.e.*, those with relatively plain breeches and C-types, *i.e.*, those with marked breech wrinkles. It was found that not only were there about three times as many breech strikes among the C-types as among A-types, but that the strikes on the former has a far greater tendency to become extensive.

The period of observation covered four lambings, and it was found that the A-type ewes reared a significantly greater number of lambs. Detailed consideration of records showed a strong association between a low percentage of lambs marked and a high incidence of strike during lambing. The available data did not indicate that fly strike occurring during the mating period had an appreciable effect on the result of lambing. That it might have such an effect, however, is not precluded. As waves of fly strike in New South Wales are generally associated with the periods of mating and lambing it is suggested that under some conditions they may play an important part in reducing the percentage of lambs marked. —D. A. Gill.

Paramonov, S. Y. (1937). **The Problem of** *Lucilia sericata.*—*Trav. Mus. zool. Acad. Sci. Ukr.* No. 19. pp. 183-196. [Numerous refs.] [In Ukranian : Russian and German summaries]. [Copied *verbatim* from *Rev. appl. Ent.* **26.** 46].

Attention is drawn to the fact that *L. sericata* is known to be responsible for

myiasis in man and to cause severe losses of sheep in many countries. In the steppes of the Ukraine and northern Caucasus, however, it has not been found infesting sheep, though it is very abundant. This may be partly due to the effect of the dry climate, but the summers are often cold and rainy. The author points out the need for further investigations of the conditions of the environment that enable larvae of *Lucilia* and other blowflies to pass from necrotic to healthy tissue.

Laake, E. W. (1936). **Economic Studies of Screw Worm Flies, Cochliomyia species (Diptera, Calliphorinae), with Special Reference to the Prevention of Myiasis of Domestic Animals.**—*Iowa St. Coll. J. Sci.* **10.** 345-359. 2 text figs., 1 plate, 3 tables. [10 refs.]

L. describes investigations made during the screw worm season :– (1) in 1931-1933 inclusive, to discover what effect systematic fly trapping would have on the incidence of myiasis, and (2) in 1929-1933 inclusive, to determine what were the chief predisposing factors in the different classes of domestic animals. It was found that trapping reduced the incidence by about 50%, but that the bait would have to be more efficient and the cost much lower before the practice could be recommended for general use.

Exposed or injured tissue of any kind predisposes to myiasis, and the chief causes were found to be :– in sheep, needle grass and fighting among rams ; in lambs, needle grass ; in goats and kids, shearing cuts ; in cattle, hooking with horns due to crowding ; in calves, navel infestation in the days following birth, and in horses and mules, barbed wire injuries. Full tables are given of these and other causes, including accidental injuries of different kinds, and infestation with ticks, lice, etc. It seems impossible to make any material reduction in fighting among rams, but most of the other predisposing factors can be avoided by simple precautions, *e.g.*, shearing of the wool of the legs and lower parts of the body (for needle grass), greater care in shearing and prompt application of a repellent to injuries, dipping for parasites, dehorning of cattle, and removal of any disused wire. A large number of blowfly cases can be avoided by modification of range management, so that births, castration, branding, dehorning, etc., do not take place during the blowfly season.

PARASITES IN RELATION TO DISEASE [HELMINTHS].

Pavlovskii, E. N., & Sondak, V. A. (1936). **Wasps (*P. gallicus*) as Carriers of Parasitic Worms.**—*Animaux pathog.* pp. 165-173. 8 figs. [7 refs.] [In Russian : German summary]. [Copied *verbatim* from *Rev. appl. Ent.* **26.** 10].

Experiments with *Polistes gallicus*, L., carried out in Abkhazia in 1934 showed that these wasps can pick up eggs of *Necator americanus*, *Ascaris lumbricoides* and *Trichuris* (*Trichocephalus*) *trichiura* from water and leave them in fresh water when they visit it to drink. Eggs were observed on their wings, legs, and body, but not in their stomach contents, although they were present in the mouth-parts. First-instar larvae of *N. americanus* occurred after two days in the mouth-parts of individuals that had been kept for four hours under a glass cover, together with the eggs of helminths. *P. gallicus* is very abundant in Abkhazia and, since it often crawls about on human faeces in latrines and alights on food, vegetables and plants, it may easily become contaminated with the eggs of helminths and carry them to foodstuffs. Of 20 individuals of *Polistes* taken in a latrine, two had Nematode larvae on their wings. The morphology of the mouth-parts and legs of *Polistes* is described in detail.

I. Kranke, W. (1936). Die Leberegelkrankheit der Schafe im Regierungsbezirk Königsberg i. Pr. in den Jahren 1931, 1932 und 1933, und ihre volkswirtschaftliche Bedeutung. [**Liver Rot in Sheep in Königsberg in 1931, 1932 and 1933**].—*Inaug. Diss., Berlin.* pp. 53. 4 figs., 6 tables, 2 maps [Numerous refs.]

II. Schmid, F. (1937). Zur Bekämpfung des Lanzettegelbefalles bei Schafen. [**Control of the Lancet Fluke of Sheep**].—*Berl. tierärztl. Wschr.* Dec. 31st. 805-808. 4 figs. [5 refs.]

III. Trawinski, A. (1937). Ueber Nachweis der Leberfäule mittels der Präzipitationsmethode. [**Diagnosis of Fascioliasis by the Precipitation Method**]. —*Zlb. Bakt. I. (Orig.).* **139.** 90-95. 1 table.

I. K. discusses fluke disease in East Prussia, where at times it has reached epidemic proportions, and concludes that, with State help to improve the conditions of pasture, etc., the farmer will be able to combat the disease successfully.

II. S. discusses the literature on the lancet fluke (*Dicrocoelium dendriticum*) and summarizes present knowledge. He considers that treatment is more hopeful than prophylaxis, and that the value of fouadin as a remedy should be further examined, as the usual drugs affecting the liver fluke are not successful against the lancet fluke.

III. The technique for the preparation of the antigen from the liver fluke and the method of conducting the test for infestation are described. 161 infected animals examined all gave positive reactions. Controls of other worm antigens with the positive sera and of the fluke antigen with normal sera indicated the specificity of the reaction.—P. S. Watts.

Stewart, M. A., Miller, R. F., & Douglas, J. R. (1937). **Resistance of Sheep of Different Breeds to Infestation by Ostertagia circumcincta.**—*J. agric. Res.* **55.** 923-930. 2 figs., 4 tables. [3 refs.]

A group of 26 lambs representing five breeds was isolated for 12 months on a pasture where the animals were exposed to infection by *O.c.* As a means of determining susceptibility, egg counts of faeces were made every two weeks. The results, which unfortunately are not given in detail, were examined statistically using the t-test. As a result of this analysis the authors conclude that Romney sheep are highly resistant, Rambouillet sheep less resistant, and Southdowns, Shropshires and Hampshires fairly susceptible. The authors point out, however, that with the exception of the Romney sheep there was a relatively high variation between individuals of the same breed; the conclusions drawn should, therefore, be accepted with caution. [It might be pointed out that "Analysis of Variance" would have been a better method of analysing these data than the t-test].—F. W. P.

Ross, I. C. (1937). **Infestation of Man with Trichostrongylus Colubriformis from Sheep.**—*Med. J. Aust.* Jan. 23rd. 122-123. [6 refs.]

Two laboratory assistants acquired infestation with *Trichostrongylus* from accidental swallowing of larvae from cultures of sheep faeces. Larvae were obtained from cultures of the faeces of one assistant and administered to two worm-free lambs. One of them was killed 26 days later and specimens of *Tr.c.* were recovered.—H. McL. Gordon.

Marcato, A. (1938). Le alterazioni delle linfoghiandole bronchiali e mediastiniche nella strongilosi polmonare degli ovini. [**Changes in the Bronchial and Mediastinal Lymph Nodes in Lungworm Disease of Sheep**].—*Nuova Vet.* **16.** 9-14. 6 figs.

The structure of the lesions in the bronchial and mediastinal lymph nodes of

sheep infested with *Dictyocaulus filaria* is very constant. The nodes are enlarged, but maintain their shape and the capsule is normal, but on section numerous caseating or calcified nodules are seen. Each nodule is composed of several well defined layers, the external being formed by concentric collagen fibres which surround a layer of lymphocytes and histocytes. The latter have a small nucleus and homogeneous protoplasm. There is next a layer of giant cells. The parasite at the centre is surrounded by eosinophiles. There is hyperplasia of the muscle tissue and the plasma cells often contain pigment, probably derived from the parasite.
—J. A. NICHOLSON.

I. SHELDON, A. J. (1937). **The Rate of Loss of Worms** (*Strongyloides ratti*) **in Rats.**—*Amer. J. Hyg.* **26.** 352-354. 1 table. [8 refs.]

II. SHELDON, A. J. (1937). **Age Resistance in Laboratory Rats to Infection with** *Strongyloides ratti.*—*Ibid.* 355-357. 1 table. [13 refs.]

III. SHELDON, A. J. (1937). **Studies on Routes of Infection of Rats with** *Strongyloides ratti.*—*Ibid.* 358-373. 4 tables. [12 refs.]

I. Thirty rats were divided into five groups and each rat was given one thousand larvae (subcut.); each group was killed in succession and the number of worms still present was noted. By the 29th day after infection the average number of worms present in each rat was 200 (20% of larvae given), but by the 36th day the figure had fallen to 15 (1·5%); it is suggested that this sudden fall may have been partly due to acquired immunity.

II. S. found that for convenience and susceptibility to infection it was best to use rats two months old. Subsequently in controlled experiments, rats 4 months old were found equally susceptible and rats 12 months old nearly as susceptible, whilst rats 17 months old showed some resistance and 8 month old rats showed marked resistance to infection.

III. Oral infection of rats under conditions which allowed the larvae time to penetrate the pre-gastric mucosa was experimentally shown to yield approximately the same rate of development as when infection occurred by the subcutaneous route. A series of experiments also showed that the low rate of development of larvae given orally under other conditions was due to several factors.—E. E. J.

IMMUNITY.

I. ANON. (1935). Esperimenti di raffronto vaccinale eseguiti sotto il controllo del comitato tecnico-scientifico dell'Istituto Vaccinogeno Antitubercolare. [**Experiments with BCG**].—*Pat. comp. Tuberc.* **1.** 65-124. Numerous tables and graphs. [English, French and German summaries].

II. ANON. (1936). Esperimenti di raffronto vaccinale eseguiti sotto il controllo del comitato tecnico-scientifico dell'Istituto Vaccinogeno Antitubercolare. II. Esperimenti principali di vaccinazione endevenosa. Esperimento di Terno ed esperimento di Paralupo. [**Further Experiments on BCG**].—*Ibid.* **2.** 3-54. Numerous figs. and tables. [English, French and German summaries].

III. BAREGGI, G. (1936). Dopo quanto tempi i vitelli vaccinati con B.C.G. si possono ritenere immunizzati. [**Duration of Immunity of Calves Vaccinated with BCG**].—*Ibid.* 151-160. 2 tables. [English, French and German summaries].

I. A detailed description of experiments on 20 calves divided into three test groups and one control group of five calves each. Calves of the former were

vaccinated (subcut.) very soon after birth with :- (1) dead BCG ; (2) killed bovine tubercle bacilli, and (3) live BCG respectively, and all four groups were tested for immunity against a 5 mg. intravenous dose of virulent organisms at about 18 weeks of age. Most calves of all groups died and all the survivors, on slaughter three months later, were found to be tuberculous.

II. Describes in detail experiments on calves, with the object of conferring immunity against TB.

It is concluded that living bacilli (BCG or human type bacilli) have undoubted powers of immunization. This was indicated by the fact that, after immunization, calves injected with virulent bovine tubercle bacilli failed to contract the disease. Other calves used as controls and injected in the same way died with clearly defined TB. lesions. Virulent bovine tubercle bacilli killed by heat failed to confer immunity, or only increased the survival time. It is considered that a better test for immunity is to expose immunized calves to natural infection by putting them with cows suffering from clearly developed TB., rather than to inject the calves with virulent bacilli.

III. A discussion on the immunity conferred by BCG, and a description of tests on two pairs of calves, one of each pair being vaccinated with BCG and all calves being infected 11 days later and killed three months after infection. The vaccinated calves were free from TB. and the controls were tuberculous. The experiment is instanced as evidence of rapid development of immunity from BCG.

—S. F. J. Hodgman.

Schulz, G. (1937). Ist die positive Tuberkulinreaktion der Kälber bis drei Wochen diagnostisch wertvoll für die Erkennung einer kongenitalen Infektion durch das an Uterustuberkulose erkrankte Muttertier ? [**Value of the Tuberculin Test in Diagnosis of Congenital Tuberculosis in Calves up to Three Weeks Old**].—*Inaug. Diss., Berlin.* pp. 14. 3 tables. [16 refs.]

The single intradermal and ophthalmic tuberculin tests were carried out on 150 calves up to three weeks old. Eight animals gave a positive reaction to both tests and the presence of TB. was confirmed in each case at slaughter. No calf which gave a negative reaction to the tests showed evidence of TB. when slaughtered. The intradermal method was found to be of more value than the ophthalmic, which gave a number of doubtful reactions.

Five of the cows which produced the tuberculous calves were positive to the intradermal tuberculin test and four of them showed tubercle bacilli in films of vaginal mucus. In only one of these cows was clinical evidence of uterine TB. obtained. Tuberculin tests on the young calves, therefore, succeeded in indicating three cows with uterine TB. in the pre-clinical stage.—E. G. White.

Higginbotham, Margaret W. (1937). **A Study of the Heteroallergic Reactivity of Tuberculin Desensitized Tuberculous Guinea Pigs, in Comparison with Tuberculous and Normal Guinea Pigs.**—*Amer. J. Hyg.* **26.** 197-223. 4 tables. [Numerous refs.]

The intradermal inoculation of tuberculous g. pigs with *Bacterium coli*, *Staphylococcus aureus* or a porcine strain of *Brucella abortus* gave rise to exaggerated inflammatory reactions similar to those characterizing the allergic reaction to the tubercle bacillus and its products. Abolition of the specific allergy to *Mycobacterium tuberculosis* by tuberculin treatment markedly decreased the heteroallergic reactivity to *Bact. coli*, *Staph. aureus* and the porcine type of *Br.a.*, but the desensitization to the heterologous bacteria did not appear to be as marked as

that observed in the case of the homologous organism. Meat infusion broth was found to possess a desensitizing activity to a lesser degree than tuberculin, on both specific and non-specific reactivity.—A. Robertson.

Huddleson, I. F., Johnson, H. W., & Hamann, E. E. (1933). **A Study of the Opsono-Cytophagic Power of the Blood and Allergic Skin Reaction in Brucella Infection and Immunity in Man.**—*Amer. J. publ. Hlth.* **23.** 917-929. 1 plate. [11 refs.]

This is the original description of the opsono-cytophagic test, so named because it depends on the opsonic power of the blood serum and on the phagocytic power of white blood cells, both being present in the samples of whole blood used in the test. The object of the work was to find a test which would show whether persons infected with brucella are in the early stage of sensitivity or in the later stage of resistance, as the agglutination and allergic tests merely show the antibody condition and give no aid in prognosis.

The test is carried out by mixing on a slide 0·1 c.c. of brucella suspension and 0·1 c.c. of whole blood previously citrated (final Na citrate concentration in the blood = 0·8%). A smear is made and air-dried, and 25 white blood cells are examined, after staining by the Hasting's stain, for the number of brucella cells ingested by them.

Intense phagocytic action indicates the immune state and slight phagocytic action the early sensitive state.

Comparisons were made (with controls) of the agglutination and opsono-cytophagic tests on numerous persons who had been exposed to brucella infection, and it was found that the latter test bore a close relation to the clinical condition. Nineteen veterinarians showing aggl. titres varying from negative to 1 : 500 were all strongly positive to the opsono-cytophagic test, indicating strong immunity. —J. E.

Huddleson, I. F., Munger, Myrtle, Gould, S. E., & Paulson, Doris. (1937). **A Study of Brucella Infection and Immunity in Humans.**—*Amer. J. trop. Med.* **17.** 863-880. 7 tables. [13 refs.]

A study was made of 8,124 individuals (5,801 males and 2,323 females) with regard to brucella infection and immunity, the following tests being used :– a skin test with " brucellergin " (a brucella nucleo-protein), the opsonic test previously described by Huddleson, Johnson and Hamann [above], the agglutination test, blood cultures in all those classified as infected, and urine and stool cultures in a large proportion of these. Individuals who gave no reaction to the skin test were regarded as susceptible to infection. Those who reacted and had a high opsonic titre were classified as immune, whilst those who reacted, but had a low opsonic titre, were classified as infected.

Of the total number examined, 845 (10·3%) gave a positive skin test; 7·1% (68·7% of the positive reactors) were classified as infected, 2·7% as immune, and 0·52% as " questionably " immune. No significant differences were noted between males and females. The skin reaction in about half of the positive cases fell between 25 and 75 mm.

Nearly half of those individuals classified as immune, and 90% of those classified as infected, had insignificant agglutinin titres.

In retests, it was found that about 10% of individuals who had given a negative skin test five months earlier had become positive. Nearly all those who were previously positive remained so. Nearly all those classified as immune again fell

into the immune group, whilst about a third of those previously classified as infected also fell into the immune group. From a comparison of the allergic response to different dilutions of the " brucellergin ", it is concluded that a dilution of 1 : 2,000 should always be used for diagnostic purposes, but that whilst dilutions above 1 : 2,000 showed a slight decrease in activity, a dilution of 1 : 25,000 is suitable for epidemiological surveys.—A. W. Stableforth.

Hope-Gill, C. W. (1938). **A Study of the Reaction Rate of the Serum-Formalin Reaction in *Trypanosoma gambiense* Sleeping Sickness.**—*Trans. R. Soc. trop. Med. Hyg.* **31.** 507-516. 3 diagrams, 1 table. [5 refs.]

From previous, unrecorded experiments it had been found that the optimum results with regard to the serum from cases of human trypanosomiasis were obtained when 2 minims of commercial formalin were added to 1 c.c. of serum in test tubes 0·5 inches in diameter. Using this technique 93% of known cases of trypanosomiasis gave positive results within 60 minutes, whilst only 2% of apparently healthy natives gave positive results in the same time.

Of 70 out-patients attending hospital for reasons other than sleeping-sickness, 16 gave positive formol-gel reactions within 60 minutes, but of these only six were proved to be infected with trypanosomes. The presence of Bayer 205 in the serum was found to retard the test, and the test did not appear to be any guide to the progress of recovery under treatment.—U. F. Richardson.

Meyer, K. (1937). Anticorps polysaccharidiques et protéidiques des sérums antituberculeux. [**Polysaccharide and Protein Antibodies in Tuberculous Antisera**].—*Ann. Inst. Pasteur.* **59.** 477-491. 5 tables. [17 refs.]

Proteins extracted from tubercle bacilli contained polysaccharides, and M. claims that, in complement-fixation tests, it is in virtue of these polysaccharides that the proteins of the tubercle bacillus react with the antibodies in tuberculous antisera.—A. Robertson.

Vieuchange, J., & Païc, M. (1938). Action de l'ultracentrifugation sur les anticorps neutralisants des immunsérums antivaccinaux. [**Ultracentrifugation of the Neutralizing Antibodies of Antivaccinia Sera**].—*C. R. Acad. Sci., Paris.* **206.** 1330-1332. [6 refs.]

Two samples of rabbit antivaccinal sera were submitted to high-speed centrifugation (83,000 r.p.m.) and the sediments collected on filter paper. There was a marked diminution in the antibody content of the supernatant fluids and a corresponding increase in the deposits. No evidence of destruction of antibody by the process was detected.—R. E. Glover.

Besredka, A. (1934). Le rôle du terrain dans les maladies infectieuses. [**Sensitivity of Different Tissues in Infectious Diseases**].—*Mém. Prof. Jean Cantacuzène.* pp. 19-21. Paris : Masson et Cie.

B. discusses the soundness of the phrase attributed to Claude Bernard : " Le microbe n'est rien, le terrain est tout." He refers to our knowledge of the mechanism of anthrax infection and local immunity and also to the susceptibility of different tissues to such infections as human typhoid, dysentery, cholera, etc. He concludes by stating that whilst Claude Bernard's statement cannot be accepted without reserve, we must recognize that the receptivity of the tissues plays a very important part in the determination of an infection.—Gwilym O. Davies.

DISEASES GENERAL.

—. (1937). **Report of the Committee on Diseases [Philipp. vet. med. Ass.]**—*Philipp. J. anim. Indust.* **4.** 113-115. 1 table.

Three cases of natural infection with tuberculosis in buffaloes are reported. One was shown to be due to the bovine type of bacillus. Outbreaks of caseous lymphadenitis in goats and of blackhead in turkeys are referred to, and three day fever in buffaloes is described.—E. E. Jelbart.

Cardona, C. J. (1938). **Veterinary Service in Venezuela.**—*Vet. Med.* **33.** 82-83.

The article contains very brief notes on the following diseases which occur in the country :- piroplasmosis, anaplasmosis, mal de caderas in equines (due to *Trypanosoma venezuelaense*, curable by naganol or antimosan), strangles, dog distemper, rabies, " borrachera " or drunkenness of cattle feeding on grass on areas recently inundated by the Orinoco river, " tropical sporotrichosis ", " peste seca " (a wasting disease, probably of varied causation), anthrax, swine fever, azoturia and dourine.—G. Williamson.

Newel, J. (1937). Tierseuchenbekämpfung in der Mandschurei. **[Animal Disease Control in Manchukuo]**.—*Berl. tierärztl. Wschr.* Sept. 17th. 586-587. 1 photograph.

Manchukuo contains livestock numbering 25 millions, and animal disease is very wide-spread. In 1925 the Southern Manchukuo Railway Company established a Veterinary Institute at Mukden. This has a research department, and veterinarians are trained there for appointment as advisers in the different parts of the country.

Glanders, anthrax, bovine TB., rinderpest, and swine fever are the main diseases of the country. The campaign of the Institute against these has been very successful. 75% of cows in Southern Manchukuo were tuberculous in 1925 : it is now almost stamped out, except in outlying districts.—D. H. Willson.

I. Schofield, F. W. (1937). **Studies in Joint-Ill of Foals. Experiments to Determine the Protective Power of the Blood Serum of Mares against Streptococcic Infection in Mice.**—*Rep. Ont. Vet. Coll., 1936.* pp. 11-12. 2 tables.

II. McIntosh, R. A. (1937). **Joint-Ill in Foals.** *Ibid.* pp. 13-15. 1 fig.

I. Serum from 10 mares with healthy foals and seven mares with diseased foals, after inactivation at 56°C. for 30 minutes, was injected into mice, in doses of 0·5 c.c., three hours before the injection of titrated lethal doses of streptococci. No appreciable difference in the protective power of the serum derived from either group of mares could be demonstrated. S. thinks that the value, if any, of blood transfusions from the dam to the affected offspring, as has been suggested for the treatment of joint-ill, is more likely nutritional than protective.

II. A case of joint-ill in a foal, developing at about two weeks of age, is described, together with the treatment employed, which included local dressings, repeated injections of anti-navel-ill serum, sulfanilamide *per os*, blood transfusions from the dam, metaphen intravenously, and oils and hypophosphites, during its ten days' course to a fatal termination. Autopsy showed the umbilical vein engorged with pus as a constant source and distributor of the infection.—E. A. W.

Žuravlev, M. S. (1937). Sustavnoĭ revmatizm ovec i koz v Kazahskoĭ i Kirgizskoĭ SSR i opyty massovogo lečenija ego. **[Rheumatism of the Joints of Sheep and Goats in Kazikistan]**.—*Sovyet. Vet.* No. 5. pp. 48-52. 1 chart.

This disease, locally called " sarbun " (yellow joint), occurs mostly in the mountainous areas during the summer, and it is suggested that it is caused by the animals eating damp fodder or drinking icy water when heated from exercise.

Imported or cross-bred sheep are less immune than local breeds. Goats also suffer from the disease, but not so severely. It appears as a remittent fever with high temperature and lameness.

No connexion has been found between the disease and brucellosis, pyosepticaemia, chronic forms of haemorrhagic septicaemia, etc. Observations made have either failed to incriminate any micro-organisms or led to the demonstration of cocci in the affected joints.

Z. concludes that the disease is due to various pyogenic organisms.

ROBERTS, G. A. (1938). **Tropical Pneumoenteritis of Calves.**—*Vet. Med.* **33.** 121-123. 3 figs.

R. reports the occurrence in Dominica and other tropical and sub-tropical countries, of a disease of calves aged from a few days to six months, characterized by pneumo-enteritis, often with a death rate of 9%. Only pure bred animals of non-native stock are affected ; native stock are resistant. No specific causal organism has been isolated. The blood shows only 30% of haemoglobin and the disease runs a course of 7-10 days. Treatment is useless.—R. FISHER.

KRAUSE, C., & FEILING, O. (1937). Nierencysten und ihre Komplikationen beim Reh. [**Renal Cysts in Deer**].—*Arch. wiss. prakt. Tierheilk.* **72.** 116-130. 10 figs. [7 refs.]

Out of 192 roe deer examined P.M., the kidneys of 4·7% of five-year-old animals, 19% of ten-year-old animals and 43·7% of older animals, were found to contain cysts which usually occurred in large numbers in the cortex immediately under the capsule ; the cysts varied in size from 0·5 to 25 mm. It is suggested that their origin was connected with parasitic disease. These cysts have a tendency to turn into adenomata.—G. HARTMANN (VIENNA).

I. DUNGAL, N. (1938). **Epizootic Adenomatosis of the Lungs of Sheep : Its Relation to Verminous Pneumonia and Jaagsiekte.**—*Proc. R. Soc. Med.* **31.** 497-505. 6 figs. [12 refs.] [Also appeared in *Bull. Acad. Méd. Paris.* **119.** 98-104].

II. TAYLOR, E. L. (1938). **The Lungworm Theory for the Origin of Epizootic Adenomatosis and the Question of the Existence of Adenomatosis in Great Britain.**—*Ibid.* 505-508.

I. This disease first appeared in Iceland during the winter of 1934, the origin being two sheep and an imported ram. Since that time the disease has become widely disseminated causing an average loss of 50-60% in affected flocks.

In the early stages of the disease, there are no diagnostic symptoms. Later there is usually coughing after exertion, and auscultation reveals moist rales, particularly in the ventral parts of the lungs. There is a great increase in bronchial secretion, and a thin froth drips from the nostrils. The disease may last for months, or even as long as a year ; in the latter case, there is marked emaciation before death.

The usual period of incubation is 6-8 months, though it may be longer. The disease is rare in lambs under seven months old.

The initial lesions consist of nodules, often situated immediately beneath the pleura, and varying from the size of a cherry to that of a hen's egg. Each nodule is composed of numerous smaller greyish nodules, which in advanced cases extend throughout the whole of the lungs. Histologically, the nodules consist of areas

of proliferation of the alveolar epithelium resembling " cystic papillary adenomata ".

Nothing definite is known regarding the aetiology of the disease. It has not been possible to demonstrate the presence of bacteria or viruses and transmission experiments have rarely succeeded. No nematode worms are to be found in the lesions.

The lesions found are identical with those described by McFadyean in sheep in Great Britain in 1888 and believed by him to be due to nematode worms. The condition is also identical with " jaagsiekte " occurring in South Africa, the symptoms and lesions in the two diseases being the same. It is considered possible that the condition is allied to neoplasia.

Although somewhat similar histological changes have been recorded in man there is no evidence that the disease in sheep is communicable to man.

II. Using active *Muellerius* larvae, obtained from the lungs of Icelandic sheep, attempts were made to reproduce experimentally a condition resembling adenomatosis, but without success. The larvae employed were identified as *M. capillaris*, the species of lungworm most frequently found in sheep in Great Britain.

No correlation could be found between the extent of *Muellerius* infestation in sheep in Iceland and the occurrence of adenomatosis.

It is considered that " jaagsiekte " and adenomatosis are the same condition and that it has occurred—and may still be present in a benign form—among British sheep. The condition is to be distinguished from verminous pneumonia.

—E. G. White.

Huskins, C. L. (1937). **Some Causes of Cancer in Laboratory Animals.**—*Canad. med. Ass. J.* **36.** 626-630.

This is mainly a discussion on heredity *versus* environment in the causation of cancer. The views held, the evidence for and against and the arguments advanced, from both the genetical and the environmental side, are presented and scrutinized. The role of viruses in the cancer problem, as exemplified by the Rous fowl sarcoma and the Shope rabbit papilloma, and the views and contentions held by Rous, are discussed at length, and compared with the theory that hydrocarbons are carcinogenic agents. Regardless of whether intrinsic or extrinsic factors constitute the " primary " or " proximal " cause, cancer results from the interaction of heredity and environment. H. stresses the importance of selecting pure strains of mice or rats, of known genetic constitution, for the purpose of determining whether heredity or environment is the proximal or primary cause in a given experiment.—E. A. Watson.

Turner, W. J. (1937). **Studies on Porphyria. I. Observations on the Fox-Squirrel, Sciurus Niger.**—*J. biol. Chem.* **118.** 519-530. [Numerous refs.]

T. first gives an outline of porphyria, showing the chemical grouping of the various forms of porphyrin ; he then describes the finding of natural porphyria in the fox-squirrel, a common rodent of North American forests. These animals have red bones ; on chemical analysis this peculiarity was found to be due to the presence of uroporphyrin I.—J. E.

Graham, N. P. H., & Gordon, H. McL. (1937). **Photosensitization Associated with Occlusion of the Bile Duct of a Merino Wether.**—*Aust. vet. J.* **13.** 125. [1 ref.]

This was an isolated case. P.M. examination revealed stenosis of the bile duct resulting from encirclement by a calcified *Cysticercus tenuicollis* cyst. There was

marked distension of the gall-bladder and bile ducts and several small gall-stones were present. It was considered that the interference with bile secretion had permitted an accumulation of phylloerythrin as in cases of experimental ligature of the bile duct.—D. A. Gill.

Lamont, H. G. (1938). **A Peculiar Disease of Sheep.**—*Vet. Rec.* **50.** 355-356.

L. reports the death of five out of six sheep that were selected for a livestock show. They were shorn about March 1st and then given an increased ration of sheep "nuts" with a 2% iodized mineral mixture containing cod liver oil and malt. (This ration was also fed to other sheep with no ill effects). All passed black urine and had swollen ears and eyebrows. The affected animals all died over a period of about three months. A ram was also affected and died. Bacteriological and toxicological examination of the ram proved negative. It is suggested that the increased ration of concentrates, possibly coupled with photosensitization, was responsible for the condition.—R. Fisher.

Schoop, G. (1937). Die "Transportkrankheit" der Zuchtfüchse. [**Transport Disease of Breeding Foxes**].—*Dtsch. tierärztl. Wschr.* **45.** 720-721. 1 fig. [Also appeared in *Dtsch. Pelztierz.* **12.** 485-487].

Internal haemorrhage, presumably due to rough handling, sometimes occurs when foxes are transported from one place to another. S. describes cases observed.

Letard, E. (1937). L'hérédité du caractère "peau nue" chez le chat. [**The Inheritance of Bare Skin in Cats**].—*C. R. Soc. Biol. Paris.* **126.** 1174-1175. 2 figs.

L. asserts that hairless kittens can be produced by mating Siamese cats which either carry this characteristic or are hairless themselves; crossing between normal and hairless Siamese cats will produce only normal kittens. Two hairless Siamese cats from the same litter when mated produced three kittens, two bare skinned and one normal.—A. T. Phillipson.

Gottron, H. (1936). Beitrag zur Epidemiologie der Zoonosen an der Haut. [**Skin Diseases Transmissible from Animals to Man**].—*Med. Welt.* **10.** 1439-1444.

A description is given of the transmission, incidence and distribution, relative to the hazards of the work of the various professions, of swine erysipelas, glanders, anthrax, brucellosis, foot and mouth disease, cow pox and skin tuberculosis. —P. S. Watts.

I. Olson, C. (1937). **Attempts to Transmit Fowl Paralysis.**—*J. infect. Dis.* **61.** 325-330. [8 refs.]

II. Beach, J. R. (1938). **Experiments in the Transmission of Fowl Lymphomatosis by Inoculation.**—*Ibid.* 67-71. 1 fig., 2 tables.

I. O. attempted to transmit fowl paralysis in two ways. Firstly, affected nerve tissue from spontaneous cases was implanted directly in the nerves of normal birds. The only reaction was a local fibrosis. The second method consisted in the transfusion of considerable amounts of blood from affected to healthy birds. Both methods failed to set up the disease.

II. Using affected nerve tissue and blood, or material from lymphomatous involvement of the viscera, B. undertook inoculation experiments. The experimental birds were White Leghorns, the incidence of lymphomatosis being high

in the source flocks. The numbers of control birds that became affected with lymphomatosis render the results of little significance.—D. L. Hughes.

Traulsen, H. (1937). Die Lecksucht der Rinder in Schleswig-Holstein. Ein Beitrag zur Kenntnis der Möglichkeiten ihrer Bekämpfung und ihrer Ursachen. [**Pica in Cattle in Schleswig-Holstein. Causes and Possibilities of Combating the Disease**].—*Landw. VersSta.* **128.** 89-125. [Copied *verbatim* from *Nutr. Abstr. Rev.* **7.** 495. Signed W. Godden].

A deficiency disease occurs in cattle in Schleswig-Holstein, mainly in the moor and health districts north of the Kiel Canal. It occurs mostly in young stock from 3 months to 2½ years of age. A critical time is when the animals are weaned from whole to separated milk. Definite conclusions cannot be drawn as to the cause of the trouble. Generally the soils in the areas in Schleswig where it occurs, are deficient in K and the hays have a low content of K and Na. Cu is not deficient. On the other hand, hay in the areas in the Schwarzwald where the trouble also occurs, has a higher K content and lower Cu and Na contents than hay from healthy areas. The pica can be cured or prevented by feeding a mixture of linseed cake, ground oats, fish meal, molasses, salt and chalk. It may also be checked by feeding hay from a pica free area, providing the cost is not prohibitive. Although there is a local tradition that broom and bell heather if grazed exercise a curative effect no proof of this could be found from the results of chemical analysis.

Salhoff, S. (1937). Beitrag zur Frage der Mangelkrankheiten bei Schaflämmern. [**Deficiency Diseases in Lambs**].—*Berl. tierärztl. Wschr.* Oct. 15th. 641-642.

In a number of dead lambs 4-6 weeks old the only abnormality found was the presence of wool balls in the abomasum. As no further losses occurred when a preparation called " Vitakalk " was fed, K. considers that these were of no pathological significance, but were a symptom of some deficiency disease.—P. S. Watts.

Bennetts, H. W., & Chapman, F. E. (1937). **Copper Deficiency in Sheep in Western Australia : A Preliminary Account of the Aetiology of Enzootic Ataxia of Lambs and an Anaemia of Ewes.**—*Aust. vet. J.* **13.** 138-149. 5 tables. [Numerous refs.]

This disease, which appears to be identical with so-called " sway-back " in England and renguera in South America, was first thought to be lead poisoning, and efforts to " de-lead " the pregnant ewes by providing licks containing commercial ammonium chloride appeared to give promising results. Subsequently, however, when pure ammonium chloride was used, no benefit whatever was derived. Spectrographic examinations of pure and commercial ammonium chloride and of livers from affected and normal lambs then suggested that there was a copper deficiency. The article describes the work undertaken and results obtained in investigating this possibility. It was found that there was, in fact, a very marked shortage of copper in the livers of affected lambs and in the blood and milk of affected ewes, when these were compared with normal ewes. The administration to 12 pregnant ewes of 15 mg. copper in the form of 0·1 % cupric sulphate solution completely prevented the occurrence of ataxia in their progeny, whereas all the progeny of 22 control ewes were affected.

The breeding ewes retained on the unsound country develop an anaemia which also responds well to small doses of copper. Curiously enough this anaemia is of the macrocytic hyperchromic variety. The anaemic ewes treated with copper rapidly improved in bodily condition and in general well-being. The copper

contents of soils and pastures in affected areas are being investigated. The article gives full details of the methods used and should be consulted in the original. —D. A. Gill.

Carlström, B., & Jonsson, G. (1938). Ataxi, konvulsioner och acetonemi i samband med B_1-avitaminos. [**Ataxia, Convulsions and Acetonaemia in Avitaminosis B_1**].—*Svensk VetTidskr.* **43.** 94-97. [Also appeared in *Skand. VetTidskr.* **28.** 144-148]. [English summary].

The authors describe a condition frequently occurring in mink, when it is known as "acidosis", and also observed in foxes. The chief symptoms are emaciation, unsteadiness, convulsions, polyuria, and acetonuria, rapidly followed by death. They suggest lack of vitamin B_1 in the ration as the cause, since the condition closely resembles B_1 avitaminosis as produced in experimental rats.

On a silver fox ranch, where the food was found deficient in vitamin B_1, 15 foxes in succession were reported to have become affected with disturbances of this kind. Twelve were already dead, but one of those still alive was successfully treated with a synthetic vitamin B_1 preparation (two injections of 1 mg. of "aneurin" given intravenously). A supplemental ration of 10 g. brewers' dried yeast daily for each animal in the rest of the stock prevented any further cases.

A few cases of acetonaemia and of the Swedish form of "pining" in cattle were also successfully treated with vitamin B_1, either synthetic or in the form of brewers' dried yeast. The authors consider that this treatment is rational; it is to be made the subject of further trials.—Gustav Naerland (Oslo).

Carlström, B. (1938). Beriberi hos hund. [**Beriberi in Dogs**].—*Skand. VetTidskr.* **29.** 218-224. [English summary].

Unaccountable disturbances in two adult dogs that had always been healthy are recorded. The main symptoms in the one were roughness of the coat, cutaneous oedema, muscular tenderness, especially in the neck region, ataxia and periodical inability to stand; and the other dog showed, in addition, oedema of the legs, paresis of the left fore-leg, and turning movements to the right. Comparison of the findings with those of beriberi in man led C. to suggest B_1- avitaminosis.

Both cases quickly responded to vitamin B_1 treatment (intravenous or subcutaneous injections of 2-5 mg. of "aneurin"). Complete recovery was observed after a daily supplement of 10 g. of brewers' dried yeast to the normal ration. —Gustav Naerland (Oslo).

Rhoads, C. P., & Miller, D. K. (1938). **Hepatic Dysfunction in Dogs Fed Diets Causative of Black Tongue.**—*J. exp. Med.* **67.** 463-467. 1 fig. [13 refs.]

Experiments were made on four dogs to find whether the histological changes occurring in the livers of dogs fed on a diet deficient in vitamin B_2 (G) give rise to any derangement of hepatic function. The quantitative ability of the liver to excrete 2 mg. of bilirubin injected intravenously was adopted as a test for liver function, the bilirubin content of the plasma being estimated before the injection, and again five minutes and one hour afterwards. In three dogs the retention was less than 5%, retention in the third being between 12-15% on a normal diet. All four animals showed increased retention after 5-7 weeks' feeding upon a diet known to produce blacktongue, although the only symptom shown was loss in weight. Liver function was partly restored by the daily addition to the diet of 10 g. of liver extract, but it remained sub-normal until the original non-deficient diet was again fed.—A. T. Phillipson.

PUBLIC HEALTH.

I. Hofman, W. (1936). Ueber die Bedeutung der Milch als Infektionsquelle bei mehreren Banginfektionen am Niederrhein. [**Milk as a Source of Infection in Cases of *Brucella abortus* Infection in the Lower Rhine**].—*Inaug. Diss., Giessen.* pp. 23. 8 tables. [Numerous refs.]

II. Lerche. (1937). Der Nachweis von Abortus-Bang-Bakterien in der Milch. [**Demonstration of *Br.a.* in Milk**].—*Tierärztl. Rdsch.* **43.** 691-694. 4 tables.

III. Morrison, H. B., & Hull, F. E. (1937). **The Presence of Agglutinins for Brucella abortus in Milk.**—*Bull. Ky agric. Exp. Sta.* No. 369. pp. 43. 8 tables. [12 refs.]

IV. Fleischhauer, G. (1937). Die Abortus-Bang-Ringprobe (ABR.) zur Feststellung von bangverdächtigen Vollmilchproben. [**Demonstration of *Br.a.* in Milk by the Ring Test (ABR)**].—*Berl. tierärztl. Wschr.* Aug. 20th. 527-528. [8 refs.]

I. H. reports on the occurrence of 24 cases of brucellosis in human beings found in six provinces in the lower Rhine. In 19 cases the infection was due to the consumption of raw milk and it was possible with six cases to relate the source of infection to the milk from a small herd where one cow was excreting brucella organisms. In such instances H. stresses the importance of detecting the source of infection and the elimination of the infected animal. Seventy bulk milk samples were examined serologically and bacteriologically for the presence of *Br.a.* and 4·3% were found to be infected.

II. L. discusses the diagnosis of *Br.a.* in milk. Summarized tables are presented of the findings of workers regarding the relationship between the milk agglutination test of quarters and mixed samples and the excretion of the organism in the milk. The safety of the milk supply is only to be guaranteed by pasteurizing milk from herds where animals react to the blood aggl. test.

III. Aggl. tests by the rapid method were made on the whey of quarter milk samples of 99 cows infected with *Br.a.* and of 132 non-infected cows in the same herds. The milk of 36% of the reactors gave no agglutination at 1 : 50; that of 5% showed partial, and that of 19%, complete agglutination, while 40% of the reactors showed differences in titre in different quarters. In general the hind quarters gave positive reactions more frequently than the fore quarters, and the titres were slightly higher in the former.

IV. F. compared the value of this test with that of the whey aggl. test for the detection of *Br.a.* agglutinins in milk. The ring test was carried out by adding one drop of coloured antigen to 1 c.c. of milk, and after incubation at 37°C. a positive reaction was judged by the appearance of a ring at the surface within two hours. Of 110 bulk milk samples examined, 26 reacted to the aggl. test, and of these 24 were positive to the ring test; of 171 samples from individual cows, 63 reacted to the former and 54 to the latter.—S. J. Edwards.

Anderson, G. W. (1938). **Undulant Fever and its Relation to the Public Health.**—*J. Amer. vet. med. Ass.* **92.** 289-301.

The public health importance of undulant fever in man is hard to evaluate; the severity of the cases varies. Eradication of the disease is the final objective, and in the meantime protective measures such as pasteurization of milk should be utilized. It is considered that the use of living vaccines on cattle offers a potential risk of infection to consumers of milk, and there is evidence that bacteria from such vaccines may appear in the milk and be pathogenic to human beings. It is hoped that a vaccine may be found which will control abortion in cattle and

also be devoid of possible human risk, but until this is realized, pasteurization of the milk of vaccinated herds should be insisted on.—S. J. Gilbert.

I. Harding, H. A. (1936). **Septic Sore Throat [Human] in Bergen County, New Jersey.**—*Bull. Dairy Res. Bur. Mich.* **15.** 165-168. [4 refs.]

II. Harding, H. A. (1937). **Epidemics and Pasteurization in Canada.**—*Ibid.* 205-208. 3 tables. [1 ref.]

I. H. describes an outbreak of human septic sore throat in April and May, 1936, embracing 175 cases, of which seven ended fatally. One cow in a dairy herd, affected with mastitis, was suspected as the origin, but was slaughtered before being definitely incriminated. This animal was thought to have been infected by a human case. The outbreak occurred only among consumers of raw milk and not among those taking pasteurized milk from the same herd. The method under trial at the Storrs Agricultural Experimental Station of building up a mastitis-free herd by examination of udder samples and segregation of affected cows is described. The Hotis (brom-cresol-purple) test is described in detail and compared with the blood agar method of testing for *Streptococcus agalactiae*.

II. Most of the epidemics are attributed to consumption of raw milk, but a few are caused by contamination after pasteurization.

H. describes efforts made in various provinces to bring about pasteurization of all milk. A table is given showing particulars of 53 epidemics in various municipalities comprising 7,935 cases (688 deaths) and of the nature of each epidemic. 38 epidemics were due to typhoid fever, three to paratyphoid, seven to scarlet fever, three to septic sore throat and two to undulant fever.

A second table shows the percentage of cattle tested for tuberculosis and for abortion in the various municipalities.—H. Burrow.

Conybeare, E. T., & Thornton, L. H. D. (1938). **A Report on an Outbreak of Food Poisoning due to Salmonella, Type 'Dublin' and Conveyed by Raw Milk.**—*Rep. publ. Hlth med. Subj., Lond.* No. 82. pp. 8. 2 tables, 2 appendixes. [7 refs.]

Over 100 persons became ill after consuming bottled raw milk infected with *S. enteritidis* var. *dublin*. No deaths occurred.

There was defective operation of the milking plant at a farm from which milk was supplied, and infected cow faeces may have been a source of contamination. Agglutinin tests against the flagellar antigens of *S.e.* var. *dublin* were made on blood serum from each of the 51 cows, because this organism had been isolated from two samples of the milk and because the Dublin type of *Salmonella* is known to occur in bovines. Three of the 51 cows reacted at from 1 : 400 to 1 : 800, and the Dublin type was isolated from the faeces of one cow. The faeces of the other two cows, and the milk of all three, were negative. After the removal of the carrier cow and attention to the milking plant, no Dublin salmonella were isolated from the bulk milk.

It is supposed that this outbreak, which affected mostly children, may throw light on hitherto unexplained attacks of vomiting and diarrhoea. Within recent years, many outbreaks of disease have resulted from the consumption of raw milk and the milk supply to which the infection was traced in these cases had passed routine bacteriological standards for cleanliness. Obviously pathogenic organisms gained access to the milk, and in the present state of our knowledge efficient pasteurization appears to be the only practicable way in which to render milk safe.

The authors suggest that, where there are outbreaks of food poisoning connected with milk or milk products, veterinary co-operation should be sought because of the possibility of an animal vector.—R. Lovell.

ANON. (1937). **Report of Committee on Meat Inspection.** [**Australian Vet. Ass.**] —*Aust. vet. J.* **13.** 132-134.

This is the report of a sub-committee set up by the Australian Veterinary Association to consider how meat inspection in Australia as a whole could best be placed on a sounder and more uniform basis than at present. The Committee stresses the fact that veterinary control and supervision are essential, as also is the need for uniformity of standards of inspection and procedure in all States of the Commonwealth.—D. A. GILL.

LORENZEN, H. (1937). Betragtninger over Kødkrontrollens Opgaver og Vilkaar paa de danske Eksportsvineslagterier. [**Meat Inspection at the Danish Bacon Export Abattoirs**].—*Skand. VetTidskr.* **27.** 701-713. [3 refs.] [English summary].

The article is a general, summarized survey of meat inspection as carried out at the Danish export abattoirs. It deals with :- laws and regulations affecting state authorized export abattoirs, meat inspection and bacon production, the routine work of the inspection (especially in examining pigs), lay *versus* veterinary inspectors, re-examination and final judgment of suspected carcasses placed aside under the pressure of work, the examination of calf and ox carcasses, the duties of the lay assistant inspector and his work under the control of the veterinary surgeon, meat inspection and its bearing upon the control of infectious diseases in livestock, regulations concerning abattoir sanitation and hygiene, animal protection, meat inspection at the export abattoirs as a veterinary occupation (15% of the Danish veterinary surgeons are engaged in this work).—GUSTAV NAERLAND (OSLO).

THERAPEUTICS.

I. PANU, A., & ADAMSTEANU, I. (1937). Contributions au traitement de quelques maladies infectieuses chez le cheval et le chien par injections intraveineuses de charbon animal. [**Treatment of Equine and Canine Infectious Diseases with Intravenous Injections of Animal Charcoal**].—*Arhiva vet.* **29.** No. 3. 1-10. 3 tables. [In French].

II. LIEGEOIS, F., & TERACHE, P. (1937). La granulothérapie. [**Intravenous Charcoal Therapy**].—*Ann. Méd. vét.* **82.** 401-408. [11 refs.]

I. The authors claim excellent results in the treatment of various infectious conditions such as distemper, strangles and equine influenza, with intravenous injections of a 2% suspension of finely powdered charcoal in serum or normal saline. The dose recommended is 2 mg. of charcoal per kg. body weight. It is suggested that the results obtained were due to the marked leucocytosis observed subsequent to the injection.

II. The preparation for injection consists of a suspension of very fine grains of charcoal, 5-15 μ in size, in distilled water ; doses of 2-4 c.c. are given daily or every second day for a week or more. The charcoal particles become deposited in the lung tissue and in the cells of the liver and spleen and are said to cause a leucocytosis and to act as a general stimulant to the body defence mechanism.

The authors used the method on nine dogs affected with septicaemia resulting from local inflammation (mostly puerperal), and claim that it was responsible for the cures obtained.—A. ROBERTSON.

Varley, J. C., & Reddish, G. F. (1936). **The Phenol Coefficient as a Measure of the Practical Value of Disinfectants.**—*J. Bact.* **32.** 215-225. 5 tables. [6 refs.]

As a result of tests carried out on special flooring material, using *Staphylococcus aureus*, *Escherichia coli* and *Eberthella typhosa* as test organisms, the authors are of the opinion that coal-tar disinfectants and cresylic acid disinfectants when diluted to 20 times their phenol coefficient are effective in killing pathogenic organisms under practical conditions of use, and that disinfectants of both high and low phenol coefficient are equally effective when diluted to 20 times their respective coefficients. Details of technique are described.—H. V. Hughes.

Rothermundt, M., & Burschkies, K. (1937). Konstitution und Wirkung aromatischer Arsenverbindungen. [**The Action of Aromatic Arsenic Compounds**].—*Zlb. Bakt. I.* (*Orig.*). **140.** 206-209. 2 tables.

The introduction of a sulphhydryl group in the benzene nucleus, or the increase in the size of the molecule by adding organic acid groups (acetic, propionic, etc.), does not increase the therapeutic action. The neurotoxic actions of "orsonin" can, however, be prevented by the introduction of a propionic acid group.—J. M. Robson.

I. Strangeways, Winifred I. (1937). **The Trypanocidal Activity** *in vitro* **of Aromatic Thioarsinites and Neoarsphenamine.**—*Ann. trop. Med. Parasit.* **31.** 387-404. 12 tables. [17 refs.]

II. Strangeways, Winifred I. (1937). **Observations on the Trypanocidal Action** *in vitro* **of Solutions of Glutathione and Ascorbic Acid.**—*Ibid.* 405-416. 4 tables, 1 graph. [11 refs.]

III. Lourie, E. M., & Yorke, W. (1937). **Studies in Chemotherapy. XVI. The Trypanocidal Action of Synthalin.**—*Ibid.* 435-445. 3 tables. [Numerous refs.] [See also *V. B.* **8.** 46].

IV. Murgatroyd, F. (1937). **Observations on the Therapeutic Action of Three Arsenicals, Neocryl, K.324 and K.352, in Gambian Sleeping Sickness.**—*Ibid.* 473-542. 4 tables. [12 refs.]

V. Launoy, L. (1937). Du traitement de l'infection expérimentale à "Trypanosoma annamense" de la souris et du cobaye, par l'Sb.-III-thiomalate de lithium (Sb. trivalent) et par les sels de glucamine de l'acide aminophénylstibinique (Sb. pentavalent). [**The Treatment of Experimental** *Tryp. annamense* **Infections of the Mouse and Guinea Pig with Sb.-III-Thiomalate of Lithium and by the Glucamine Salts of Aminophenylstibinic Acid**].—*Bull. Acad. Méd. Paris.* **117.** 743-749.

VI. Launoy, L., & Prieur, Marie. (1937). Étude de l'action trypanocide comparée sur *Tr. brucei*, *Tr. congolense*, *Tr. annamense* normal et *Tr. annamense* chimiorésistant de quelques composés organiques d'antimoine. [**The Trypanocidal Action of Some Organic Antimony Compounds**].—*Bull. Soc. Path. exot.* **30.** 869-871. 2 tables. [1 ref.]

VII. Bar, F. (1937). Festigungsversuche mit einer Arseno-Stibio-Verbindung (Std. 386 B). [**Experiments with an Arseno-Stibio-Compound (Std. 386 B)**].—*Zlb. Bakt. I.* (*Orig.*). **140.** 209-216. 2 tables. [Numerous refs.]

VIII. Lagodsky, H. (1938). Toxicité et activité trypanocide (*Tr. brucei*) du chlorure de rhodium, chez la souris. [**Toxicity and Trypanocidal Action of Rhodium Chloride in Mice**].—*Bull. Soc. Path. exot.* **31.** 44-46. [4 refs.]

I. Thioarsinites have a toxicity for trypanosomes *in vitro* in high dilution; this is due to the hydrolysis of the compound in aqueous solution with liberation of the highly trypanocidal arsenoxide. Neo-arsphenamine has a trypanocidal action *in vitro* in low concentrations, although these are higher than those found for arsenoxides and thioarsinites. The evidence suggests that neo-arsphenamine is absorbed by the trypanosomes and becomes oxidized, either within the trypanosome or on its surface, to the highly trypanocidal arsenoxide.

II. In neutral or slightly alkaline solutions of glutathione and ascorbic acid exposed to air, a substance is rapidly formed which is very toxic for trypanosomes *in vitro*. The evidence suggests that this substance is identical with hydrogen peroxide.

III. The finding of von Jancsó [*V. B.* **5.** 756, and **8.** 44.] and Schern [*V. B.* **8.** 502.], that synthalin has a therapeutic action on mice injected with various pathogenic trypanosomes, was confirmed. Synthalin exerts *in vitro* a powerful trypanocidal action, a concentration of 1 : 262,000,000 sufficing to destroy practically all the trypanosomes in the suspensions within 24 hours. It is just as active *in vitro* for the atoxyl- and Bayer 205-resistant strains as for the normal strains. These observations support the conclusion that the therapeutic action of synthalin depends on a direct lethal effect of the drug on the parasites, and is not secondary to the production of hypoglycaemia, as suggested by the above authors.

IV. "Neocryl" produced a rapid and definite clinical improvement in practically every case treated, although some of the patients were in a very advanced stage of disease. Disturbances of vision were observed in a few cases. The results are very similar to those obtained with tryparsamide. K.324 and K.352 were found to be toxic for man in relatively small doses, and all doses up to the maximum tolerated were ineffective in the therapy of human cerebral trypanosomiasis.

V. The trivalent antimony compound is active in the mouse, especially in early infections; in later infections cure is obtained in 50% of cases. In the g. pig the compound prolongs the disease, but does not cure it. There is a marked synergistic action of this compound with moranyl in the mouse. The pentavalent compounds are very active in *Tryp. annamense* infections of the mouse.

VI. Mice were infected with trypanosomes made resistant to the arseno-stibio compound. The infection was not cured by a variety of arsenicals and antimony compounds in doses which did cure infections with non-resistant trypanosomes, but certain compounds, including fouadin and germanin, were more effective against the resistant than against the non-resistant trypanosomes.

VII. The most active compound is aminophenyl stibinate of methyl glucamine. The toxic dose for *Tryp. brucei* and *Tryp. annamense* contains 25 mg. Sb, and the therapeutic dose 5 mg. The trypanocidal dose for *Tryp. congolense* (naturally resistant to arsenicals) contains 10-25 mg. of Sb, as does also the trypanocidal dose for *Tryp. annamense* made resistant to arsenicals.

VIII. In mice weighing 20 mg. the MLD of rhodium chloride is 0·006 g. when injected intravenously, and 0·01 g. when injected subcutaneously. Non-toxic doses given intravenously or subcutaneously have no trypanocidal action.
—J. M. Robson.

Yakimoff, W. L., & Sudzilowsky, M. N. (1937). Ueber die Wirkung des Todorit auf Babesiella bovis. [**The Action of "Todorit" on** *B.b.*]—*Berl. tierärztl. Wschr.* Oct. 1st. 609-610. [5 refs.]

Twelve cases were treated intramuscularly or intravenously with 4-10 c.c. doses of "todorit". The results were very satisfactory. Haemoglobinuria disappeared in 24 hours or less and the blood became free from parasites. J. M. R.

Saillard. (1938). La gonacrine comporte des contre indications. [**Contra-Indications for the Use of Gonacrine for Piroplasmosis**].—*Maroc méd.* **18.** 73-74. 1 table.

S. advises that gonacrine should not be used for the treatment of piroplasmosis in animals simultaneously affected with foot and mouth disease, as it may rapidly produce fatal results ; this is especially the case when the cardiac muscle has been affected.—J. M. Robson.

Gettkandt-Hamburg, A. (1937). Wirkung von Schlangengiften auf Trypanosomen und Spirochaeten. [**Action of Snake Poison on Trypanosomes and Spirochaetes**].—*Dtsch. tierärztl. Wschr.* **45.** 544-546. 1 fig. [2 refs.]

Snake poisons (*Bitis arietans* and *Naia tripudians*) were administered to infected mice. Small doses inhibited the movements of trypanosomes, and large doses caused their destruction ; administration of the poisons also led to the disappearance of *Spirochaeta recurrens*.—J. M. Robson.

Purchase, H. S. (1938). **The Treatment of Demodectic Mange of Cattle with Neosalvarsan.**—*Vet. J.* **94.** 75-77. 2 figs. on 1 plate.

A description of two cases is given. The symptoms of the first arose suddenly and were severe. They disappeared 36 hours after an intramuscular injection of 1·2 g. of neosalvarsan. No live parasites could then be found in skin scrapings. The second case was of the usual chronic description. Irritation ceased after a dose of 0·9 g. of neosalvarsan (subcut.) and ten days later most of the parasites were dead, but a few were alive even after four doses had been given.—G. Williamson.

I. Lucker, J. T., & Schaffer, J. M. (1937). **The Effect of Certain Volatile Halogenated Hydrocarbons on the Eggs and Larvae of Nematodes.**—*Vet. Med.* **32.** 564-569. 3 tables. [8 refs.]

II. Stewart, M. A. (1937). **Iso-Amyl-Cresol : A New Anthelmintic.**—*Cornell Vet.* **27.** 338-348.

III. Underwood, P. C., Harwood, P. D., & Schaffer, J. M. (1938). **Effects of Treatment with Brilliant Green on Some Tapeworms Infesting Poultry.**—*Proc. helminth. Soc. Wash.* **5.** 33-34. 1 table.

I. In faeces treated with a mixture of dichloropentanes (0·5-1%) nearly all eggs or preinfective larvae were killed ; the results were rather less satisfactory with a commercial mixture of 75% ethylene dichloride and 25% carbon tetrachloride. Carbon tetrachloride (about 1%) was very effective in killing eggs and preinfective larvae of strongyles ; ethylene dichloride was less effective. It is suggested that large scale tests should be carried out with dichloropentanes on manure.

II. The drug is highly efficient in the treatment of *Dipylidium caninum* infestation in dogs ; the dose of 0·1 c.c. per lb. body weight must be followed by a purgative of magnesium sulphate. A single dose usually produces complete elimination, but more than one dose may be necessary with mass infestation. The drug is very selective and has no effect against such tapeworms as *Taenia multiceps*, *T. serialis* and *Dipylidium sexcoronatum*. Two to three times the therapeutic dose produces no toxic effects whatever ; and six times the dose produces only slight lethargy and nausea in the host, with no effect on these other worms.

III. Tests on naturally infested, full-grown chickens are described. Twelve birds received the very soluble brilliant green sulphate (150-400 mg. in solution or in granular form), and nine of them died. The treatment failed to remove any of the 28 specimens of *Raillietina cesticillus* present ; this is the most common type

of tapeworm infesting poultry in the U.S.A. One specimen of *Choanotaenia infundibulum* and most of the specimens of *R. tetragona* were removed. The much less soluble brilliant green picrate, in doses of 100-200 mg., did not remove any tapeworm heads in four birds in which 92 heads of *R.c.* were subsequently found. Treated birds were severely affected with diarrhoea.—J. M. Robson.

Schofield, F. W. (1937). **A Simple and Effective Method of Administering Iron for the Prevention of Anemia in Piglets.**—*Rep. Ont. Vet. Coll., 1936.* pp. 16-17. 1 graph.

Reduced iron in doses of 0·3 g. is administered by placing the powder directly on the tongue. Two doses, the first when the pig is 3-4 days old and the second 8-10 days later, are recommended. This treatment may be supplemented by placing in a corner of the pen a shovelful of earth or a sod sprinkled with a saturated solution of ferrous sulphate.—E. A. Watson.

Hillebrand, E. (1937). Pyrifer, sein Einfluss auf das Blutbild gesunder Pferde und seine diagnostische Verwendbarkeit bei der ansteckenden Blutarmut des Pferdes. [**Influence of " Pyrifer " on the Blood Picture of Healthy Horses and its Diagnostic Value in Equine Infectious Anaemia**].—*Inaug. Diss., Berlin.* pp. 58. 26 tables, 3 graphs. [Numerous refs.]

" Pyrifer " is a proprietary preparation comprising certain non-pathogenic bacteria derived from milk, and their break-down products. It has been used in human medicine for inducing pyrexia ; it also causes a leucocytosis, followed later by a lymphocytosis.

The effects on the blood picture of intravenous injection of varying amounts of the drug were studied in healthy horses and in animals affected with E.I.A.

It is suggested that a marked fall in the erythrocyte count eight days after the injection occurs only in animals with E.I.A. ; the method is clearly unsuitable as a field test.—E. G. White.

Schömmer, F. (1937). Schlangengifte und ihre Bedeutung für die Therapie. [**The Use of Snake Poison in Therapeutics**]. *Münch. tierärztl. Wschr.* **88.** 565-569 and 580-586. [Numerous refs.]

Schömmer, F. (1937). Schlangengifte und ihre Bedeutung für die Therapie. [**Snake Poisons in Therapeutics**].—*Berl. tierärztl. Wschr.* Dec. 10th. 757-760 ; Dec. 17th. 773-775, and Dec. 24th. 789-791. [Numerous refs.]

The poisonous snakes of therapeutic interest belong to the groups Colubridae (*Naja* and *Elaps*) and Viperidae (*Lachesis* and *Crotalus*). The comparatively small knowledge on the chemical composition of snake poisons is reviewed. The poisons have two chief types of action, *viz*, curare-like action, especially on the peripheral nerves, and an action on the vaso-motor centre, the blood vessels, and the blood. Other actions are briefly discussed. The potency of the poisons can be estimated in terms of the M.L.D. for white mice. The dried poison of *Naja* contains 20 thousand to 80 thousand mouse units per gram. The effect of snake poisons are divided into :- (1) toxic effect with possible lethal action, produced by large doses ; (2) active immunization, produced by medium doses ; (3) therapeutic effects, produced by small doses, and (4) so-called homeopathic actions. A summary of the chief uses of snake poisons in therapeutics (allopathic and homeopathic) is given. Injections of *Lachesis* venom are advocated in veterinary medicine for the following conditions :- infected wounds, puerperal infections, local cellulitis, risk of septicaemia, haemorrhage of non-traumatic origin, abscesses and jaundice. —J. M. Robson.

POISONS AND POISONING.

Moxon, A. L., & Poley, W. E. (1938). **The Relation of Selenium Content of Grains in the Ration to the Selenium Content of Poultry Carcass and Eggs.** —*Poult. Sci.* **17.** 77-80. 4 tables. [8 refs.]

In a series of experiments of feeding poultry with seleniferous grains at known levels of Se intake, the Se content of the flesh, eggs and internal organs appeared to be associated with the Se content of the food. On rations containing less than 2·5 p.p.m. Se the eggs and flesh contained a level of Se lower than the suggested tolerance limit of 4 p.p.m. in food, but with 10 p.p.m. in the food this limit was considerably exceeded in the flesh and eggs.—Alfred Eden.

Shearer, G. D. (1938). **Some Observations on the Poisonous Properties of Buttercups.**—*Vet. J.* **94.** 22-32. 3 tables. [Numerous refs.]

The toxic principle of buttercups is a yellow acrid oil, proto-anemonin, which can be separated by steam distillation and estimated by titration with NaOH after extraction with ether. The proto-anemonin content of *Ranunculus bulbosus* was found to reach a maximum [1·6% on a dry matter basis] near the time of full flower and eight other *Ranunculus* species examined at a similar growth stage showed a proto-anemonin content ranging from 0·2 to 3·2% of the dry weight. Repeated examinations of these species for cyanogenetic glucosides, alkaloids and saponins showed HCN to be present in only two species, *R. arvensis* and *R. ficaria* and then only in traces. The harmful qualities of buttercups are ascribed as being due entirely to their proto-anemonin content. Generally, large quantities of buttercups must be fed before death ensues from gastro-enteritis, although the yellow oil also causes blistering of the buccal mucous membrane rendering mastication difficult. Hence it appears that fatal poisoning due to ingestion of buttercups is a very remote possibility.—Alfred Eden.

Albiston, H. E. (1937). **The Joint Leaf Rush (Juncus Holoschoenus): A Cyanogenetic Plant.**—*Aust. vet. J.* **13.** 200.

Large amounts of this plant were found in the stomachs of three calves which died suddenly. Samples of the growing plant tested with Na picrate were found to be intensely cyanogenetic. The plant is common in coastal and swampy areas of Victoria, New South Wales and Tasmania.—D. A. Gill.

PHYSIOLOGY.

Berge, E., & Bruggemann, J. (1938). Notiz über den Schwefelgehalt und seine Verteilung im gesunden und kranken Hufhorn des Pferdes. [**Sulphur Content and Distribution in Diseased and Healthy Hoof Horn of Horses**]. —*Arch. wiss. prakt. Tierheilk.* **72.** 445-447. 1 table. [5 refs.]

Using Carius' method, analyses of horn taken from various parts of the horse's hoof showed the average S content to be 2·24%. The frog had a much lower S content than other parts of the hoof, the average being 0·71%, which reduced the average for the whole hoof to 1·98% S. Horn from horses affected with any hoof disease had a slightly lower S content than that from healthy hoofs.—J. A. N.

Linton, R. G. (1937). **The Composition of Mare's Milk. II. The Variation in Composition During Lactation. III. The Influence of Intra-Mammary Pressure on the Composition of Milk with Special Reference to the Mare**

and Cow.—*J. Dairy Res.* **8.** 143-172. 13 tables, 5 diagrams. [Numerous refs.] [See also *V. B.* **2.** 358].

Periodic analyses were made of the milk of Shetland pony mares and one Clydesdale mare from the time of foaling until weaning, the mares being kept at grass. Various constituents were estimated, including total solids, protein, fat, lactose, ash, CaO, P_2O_5 and Cl. The freezing point and pH were also recorded in a number of samples. Results showed a slight increase during lactation in the percentage of lactose, fat and total solids, and a decrease in protein and ash. There was a marked decrease in the percentage of ash, the values at the close of lactation being approximately half those at the beginning of the post-colostral period. The CaO : P_2O_5 ratio remained fairly constant in the neighbourhood of 1 : 1. The effects of increased intra-mammary pressure on the percentage composition of the milk were also studied in the case of both cow and mare. In cows left unmilked for varying periods up to 48 hours there was a fall in total solids, chiefly due to decrease in lactose and fat. There was an increase in protein and ash, the latter being mainly an increase in chlorides. Similar results were obtained with milk from mares at varying periods after weaning, except that the fat content of the milk was very variable and showed a tendency to increase.—A. Robertson.

Favilli, N. (1937). Strucktur und Tätigkeit des dritten Magens (Blättermagen oder Psalter) bei den Hauswiederkäuern. [**Structure and Function of the Omasum**].—*Dtsch. tierärztl. Wschr.* **45.** 592-594. 1 fig. [8 refs.]

From a histological study of the omasum of sheep and cattle, F. concludes that the principal actions of the omasum are compression and absorption. He considers that the laminae are not capable of individual movement, and that any maceration which the food undergoes in its passage through the omasum is incidental. The epithelium of the laminae is from 5-8 cells thick, only the exterior, to the depth of 2-3 cells, being keratinized ; the laminae are richly supplied with blood vessels, which form a sub-epithelial network. The fluid part is pressed out from the food when the omasum contracts, but F. considers that the thickened free edges of the laminae, aided by capillary attraction, prevent the fluid from running into the abomasum, and that it is absorbed in the omasum.—A. T. P.

Schwarze, E. (1937). Ueber Bau und Leistung der Milzkapsel unserer Haussäugetiere. [**Structure and Function of the Spleen Capsule of Domestic Mammals**].—*Berl. tierärztl. Wschr.* Aug. 20th. 521-522. [8 refs.]

Histological examinations show that the splenic capsule of domestic animals is composed of smooth muscle and elastic tissue. In horses, cattle and pigs the tissues are arranged in fairly well defined layers, whilst in sheep, goats, dogs and cats these layers are not well defined. The greater part of the smooth muscle is confined to the deeper parts of the capsule. The muscle bundles lie parallel to the surface so that they are probably concerned with the splenic contractions. —J. A. Nicholson.

Fraser, A. C. (1938). **A Study of the Blood of Pigs.**—*Vet. J.* **94.** 3-21. 8 tables. [19 refs.]

A detailed description is given of the morphology of the blood cells of pigs. Total and differential blood counts are given at four stages of life :– (1) from birth to three days, (2) from one week to one month, (3) from 2-7 months, and (4) from 1-2 years. Great variation was found in both red and white cell counts in all groups. The most striking feature is the low red cell count found in many sucking pigs, together with the presence of a high percentage of reticulocytes. In clinical

cases of anaemia reticulocytes were present up to 24%, and there was an increase in eosinophiles.

The cell counts in the four groups are tabulated, the highest and lowest limits in each group being given. The figures for red cells, expressed in millions per c.mm., were :– (1) 4·3-7·1, (2) 4·9-7·8, (3) 5-8·2, and (4) 5·9-9 ; those for the white cells expressed in thousands per c.mm. were :– (1) 9-28, (2) 5-21, (3) 10-31, and (4) 9-28. The differential white cell count gave the following average percentage figures :–

	Group 1.	*Group* 2.	*Group* 3.	*Group* 4.
Lymphocytes	32·3	55·7	48	39
Monocytes	3·7	5·5	6·1	3·7
Neutrophiles	61	39	39	53
Eosinophiles	2·9	0·8	5·5	4·1
Basophiles	0·3	0·1	0·5	0·4

Four blood samples from a sow were examined, being taken at varying intervals from five days before farrowing to 24 hours after ; the only variation found was an increase in the total white cell count to 45,000, eight hours after parturition ; this was due to an increase in neutrophiles and a decrease in lymphocytes, basophiles completely disappearing. Normal counts were again obtained 24 hours after parturition.—A. T. Phillipson.

I. Winkelmann, H. (1937). Die Lymphknoten des Meerschweinchens. (I. Beitrag zum Lymphgefässsystem des meistverwendeten Versuchstieres : Cavia porcellus L. cobaya.) [**The Lymph Nodes of Guinea Pigs**].—*Z. InfektKr. Haustiere.* **52.** 232-249. 2 figs. [Numerous refs.

II. Keller, G. (1937). Die Lymphgefässe der Haut des Meerschweinchens. (II. Beitrag zum Lymphgefässsystem des meistverwendeten Versuchstieres Cavia porcellus L. cobaya.) [**The Lymph Vessels of the Skin of the Guinea Pig**].—*Ibid.* 250-266. 2 figs. [16 refs.]

I. The distribution of the lymph nodes of 20 g. pigs of both sexes and of various ages were investigated both in the fresh and fixed condition. In four cases the injection method of Baum was used. The position and number of each group of nodes are minutely described and compared with those of the sheep and dog. Many groups vary in position and number ; some which are present in the sheep and dog may even be entirely absent, especially in the case of the cubital and femoral nodes.

II. Using the injection method of Gorota on 12 g. pigs immediately after killing by ether inhalation, the course of the macroscopic cutaneous lymphatic vessels was traced. The areas of skin and the vessels and nodes by which they are drained are described and illustrated by two excellent and well labelled drawings. —A. T. Phillipson.

Reece, R. P., & Turner, C. W. (1937). **The Lactogenic and Thyrotropic Hormone Content of the Anterior Lobe of the Pituitary Gland.**—*Res. Bull. Mo. agric. Exp. Sta.* No. 266. pp. 104. 10 figs., 28 tables. [Numerous refs.]

Five hundred pituitary glands were collected from cattle, weighed and assayed for their lactogenic and thyrotropic principles. The average, maximum and minimum weights of six groups of pituitaries were as follows :– (1) 51 foetuses :– 0·04 g., 0·27 g., and 0·0005 g. respectively ; (2) 22 calves (up to three months old) :– 0·65 g., 0·92 g., and 0·32 g. ; (3) 234 animals 4-10 months old :– 0·9 g., 1·56 g., and 0·34 g. ; (4) 163 animals 11-23 months old :– 1·16 g., 3·34 g., and 0·5 g. ; (5) 50 dairy cows aged two years or over :– 1·75 g., 2·78 g., and 0·74 g., and (6) 22 beef cows of the same age :– 1·87 g., 2·54 g., and 0·89 g.

Pituitary size in itself is not indicative of physiological activity. There is no constant difference in weight between the pituitary glands of females and those of males; pregnancy made very little difference.

The lactogen content is described in "bird units", a bird unit being defined as that amount of hormone which causes the proliferation of an area of the crop gland about the size of a "small coin" when injected intradermally over the crop gland of a mature pigeon daily for four days. For the foetuses examined, the average number of bird units per pituitary was 0·74; for calves (under four months old) it was 111·4; for bulls 4-10 months old, 296·7; for heifers of the same age, 331·5; for bulls 11-23 months old, 249·9; for heifers of that age, 438·9; for dry beef cows, 746·9; for dry dairy cows, 1449·3; for dry and pregnant beef cows, 890·1; for dry and pregnant dairy cows, 1113·4; for lactating beef cows, 1072·9, and for lactating dairy cows 1380.

The thyrotropic assay results were expressed in "guinea pig units", a g. pig unit being defined as that amount of hormone which will elicit a 50% increase in the weight of the thyroid glands of a group of four male g. pigs weighing 140-170 g., when injected (subcut.) daily for four days. The number of g. pig units contained in 1 g. of fresh anterior lobe tissue from various groups of cattle were :– 26·4 from calves; 32·1 from heifers and 38·4 from bulls 4-10 months old. For non-pregnant heifers, pregnant heifers, bulls, and steers, 11-23 months old, the figures recorded were 24·6, 37·5, 35 and 16·3 respectively. The figure for dry and non-pregnant beef cows was 22·5; for dry and pregnant beef cows, 20·1; for lactating beef cows, 24·79; for dry and non-pregnant dairy cows, 36; for dry and pregnant dairy cows, 23·7, and for lactating dairy cows, 32·45.

The lactogen content of pituitary glands from laboratory animals under various physiological conditions was also studied. A species difference was found in the lactogen content of pituitary glands per mg. of fresh pituitary tissue. Pituitary glands from females ranked for lactogen content in the following descending order :– dairy cow, g. pig, beef cow, rat, rabbit, mouse, oestrous cat, and anoestrus cat. The factors affecting pituitary size and the lactogenic and thyrotropic content are discussed.—A. Robertson.

Svensson, S. (1937). Några data över Aschheim-Zondek-reaktionens användbarhet för sto. [**The Value of the Aschheim-Zondek Reaction for Mares**]. —*Skand. VetTidskr.* **27.** 714-725. 3 tables, 2 graphs. [1 ref.] [English summary]. Discussion pp. 726-727.

During the last three seasons 1,659 mares have been tested for pregnancy by this reaction; 1,002 gave positive, and 657, negative reactions. S. has dealt with these results statistically, showing them in tabular and graphic forms.

Excluding a few cases tested before the 45th and after the 114th day after service, the percentage of error, the causes of which are shortly discussed, was 4·1 in pregnant mares as against 4·4 in non-pregnant mares. The fewest errors occurred when the test was performed between the 59th and 65th days after service; the test is, however, very reliable between the 50th and the 86th days.

Two blood samples taken from pregnant mares and stored at 10°C. for 520 days still gave positive A.-Z. reactions.—Gustav Naerland (Oslo).

Barulin, K., & Burčenko, E. (1935). Morfologičeskiĭ metod Benesch-Kurosava opredelenija žerebosti. [**The Morphological Method of Benesch-Kurosava for Diagnosing Pregnancy in the Mare**].—*Probl. Zivotn.* Nos. 4/5. pp. 226-233. 2 figs. [Abst. from abst. in *Anim. Breed. Abstr.* **4.** 9-10].

The authors investigated the variation in the vaginal picture of the mare

throughout the sexual cycle. One group of animals was found in which prooestrus is characterised by a slight leucocytosis ; in the other group, the curve of leucocytosis was unimodal but the peak did not always correspond to oestrus. It is considered, therefore, that vaginal smears are not a reliable indication of oestrus. On the other hand, smears from pregnant mares are very characteristic, showing numerous ciliated epithelial cells or their debris, while the mucus forms intensely pigmented globules. These two symptoms are reliable signs of pregnancy. The technique requires further elaboration.

Haring, F. (1937). Der Einfluss des Begattungszeitpunktes während der Rauschzeit beim Schwein auf den Befruchtungserfolg und das Geschlechtsverhältnis der Ferkel. [**Influence of Time of Copulation on Fertility of Sows**]. —*Zuchtungskunde.* **12.** 1-19. 8 tables. [Numerous refs.]

By mating a sow twice with two different boars, black and white, during one period of heat, the resulting progeny from each sire can be distinguished by their colours. Thirty-one experiments on these lines were carried out in order to determine the time in one period of heat when copulation will produce the largest litter. The following deductions were made, which agree with results of other workers :– heat in the sow lasts 2-3 days, sometimes four ; ovulation reaches its peak 24-36 hours after the onset of heat, and the length of life of the spermatozoa is not longer than 24 hours. No information was obtained regarding the length of life of the series of ova. The time of service has an important effect on the number of progeny, the most favourable time being during the second day of heat, when ovulation is at its height ; at other times the result is doubtful. The time of service has no effect on the sex of the progeny.—A. T. Phillipson.

Kostner, M. (1938). Beobachtungen über den Einfluss der Sexualhormone auf die Haut und das Haarkleid der Hündin. [**Influence of Sex Hormones on the Skin and Coat of Bitches**].—*Wien. tierärztl. Mschr.* **25.** 69-83. [12 refs.]

Observations suggest that in bitches there is a connexion between disturbance of the sex glands and susceptibility to eczema, the disease often accompanying pituitary or ovarian dysfunction. For this reason, K. used specific hormonal therapy on a number of bitches which showed eczema accompanied by disturbance of the sex organs.

Bitches showing prolonged heat periods together with eczema received up to 500 units of " pregnyl " (subcut.) ; those showing an absence of heat and eczema received up to 5,000 units of oestrone. In both cases the return to normal oestral periods was accompanied by complete resolution of the skin lesions.

Eczema in dogs did not respond so successfully to hormonal treatment, nor did eczema in foxes.—J. A. Nicholson.

Johansson, I. (1938). **Reproduction in the Silver Fox.**—*Lantbr.-högskol. Ann., Upsala.* **5.** 179-200. 12 figs., 7 tables. [7 refs.] [In English : Swedish summary].

The article is mainly a study of breeding statistics obtained from an association established a year previously to assist Swedish silver fox farmers. The net result of reproduction amongst over two thousand females kept for breeding was only 55 % of what it might have been if all females had produced an average of 4·5 young each year and all cubs had survived. The most important causes of this loss are considered to be the frequency of sterile matings or sexual inactivity of females (commonest among one year old vixens), and deaths among the young (the loss from birth to pelting time being over 15 %). Observation inclines J. to believe that

practically all vixens ovulate during the sexual season, but that oestrus is sometimes so short and the signs so indefinite that it is overlooked. The old practice of monogamous breeding would thus be more dependable than polygamous matings which are common in Swedish fox farms.—H. V. Hughes.

Schmitz, A. (1938). Die Eiweissstruktur des Blutserums. [**The Serum Proteins**].—*Reichsgesundheitsblatt.* **13.** 159-163. 5 figs., 1 table. [Num. refs.]

Natural proteins when in solution represent complexes of several components which are held together by close valency unions, and which tend to dissociate on dilution. The components need not be all of the same class of substance, so that a natural protein may be built up of protein chains and non-protein substances, *e.g.* lipoids. Treatment of soluble proteins with precipitating agents is likely to produce a profound change in the structure of their molecules, and in the case of serum proteins there is evidence that serum albumin and serum globulin do not occur as such in plasma, but are formed during precipitation.

Chemical analyses suggest that tyrosine and tryptophane occur in smaller amounts in serum albumin than in serum globulin, whilst " seroglycoid " recently separated from serum albumin contains a carbohydrate group. Three different fractions of serum globulin have been separated by means of precipitation with ammonium sulphate.

It is concluded that the natural structure of serum proteins can never be determined by precipitation methods. The most promising line of attack is the study of immunological reactions and Abderhalden's reaction, since chemical and physical methods are of little value for differentiating protein fractions.—J. A. N.

Anon. (1937). **Carotene and Vitamin A in Animal Nutrition.**—*Aust. vet. J.* **13.** 162-165. [5 refs.]

This article is an annotation of certain contributions to our present knowledge of vitamin A. It deals first with the derivation of this vitamin from the carotenoids by various species of domestic animals, passing on to a consideration of the vitamin A content of milk, the effects of vitamin A-deficiency and the daily requirement of this vitamin by cattle, sheep and pigs on a body weight basis. The article is, in itself, a valuable summary and cannot be abstracted.—D. A. Gill.

Wooldridge, W. R. (1938). **Vitamin E.**—*Vet. Rec.* **50.** 358-361. [13 refs.]

An annotation summarizing the present knowledge on vitamin E, which is necessary for the reproductive function. Quotations are made from research work on domestic animals.—J. E.

TECHNIQUE AND APPARATUS.

Simons, H. (1938). Nouvelle méthode de coloration et de diagnostic des protozoaires sanguicoles dans les gouttes épaisses (saponin-bleu de méthylène). [**New Method for Staining and Diagnosis of Protozoan Blood Parasites in a Hanging Drop (Saponized Methylene Blue)**].—*Bull. Soc. Path. exot.* **31.** 100-106. [17 refs.]

By utilizing the haemolytic properties of saponin and the penetrating powers of methylene blue in isotonic solution, a method was devised for the rapid demonstration of blood protozoa. Although not always yielding such good morphological details as Giemsa's, it is more reliable for showing up the parasites when they are scarce. Further, it does not require extra pure distilled water, as does the classical Giemsa stain.—H. S. Purchase.

MISCELLANEOUS.

I. Scott, W. M. (1937). **Biennial Reviews of the Progress of Dairy Science. Section F. Milk-Borne Diseases.**—*J. Dairy Res.* **8.** 265-273. [Num. refs.]

II. Mattick, A. T. R., Hiscox, E. R., & Davis, J. G. (1937). **Biennial Reviews of the Progress of Dairy Science. Section B. Bacteriology and Mycology Applied to Dairying.**—*Ibid.* 369-405. [Numerous refs.]

These reviews should be read in the original.

I. The matter is classified under the following headings :– streptococcal infections, brucella infections, tuberculosis, salmonella infections, staphylococcus infections and epidemiology.

II. Of veterinary interest are part I, dealing with milk control with the aid of the plate count and methylene blue reduction tests, and part IV, which deals with pasteurization as a means of destroying pathogenic bacteria.—J. E.

Kelley, R. B. (1936). **Zebu (Brahman) Cross Cattle and their Possibilities in North Australia. Co-Operative Investigations in Queensland. Progress Report No. 2.**—*Progr. Rep. Coun. sci. industr. Res. Aust.* No. 2. pp. 2 + 35. 19 figs. on 14 plates, 8 tables. [4to] [Mimeographed].

This report records observations on the zebu cattle introduced into North Australia in 1933 and on the progeny resulting from their mating with Shorthorn, Red Poll, and Hereford cattle. It is apparent from the report that the zebus find the climatic and environmental conditions very suitable. They thrive and hold their condition under circumstances of drought and feed shortage which severely affect the British breeds. Circumstantial evidence supports the contention that they are also less susceptible to cattle ticks and to infection with *Babesia bigemina*. The progeny of the first cross with British breeds show a considerable reduction in the zebu hump, and the ear length also is somewhat reduced. In other ways the first cross shows many similarities to the zebu parent. The quarter-bred and three-quarter-bred zebus tend to resemble the British breeds and zebus respectively. The cross-breds have thrived and grown much better than have comparable cattle of the British breeds. Definite conclusions can only be drawn when many more animals of the various crosses are available for observation, but the progress to date is highly satisfactory both to the pastoralists who have co-operated in the work and to the Australian Council for Scientific and Industrial Research.
—D. A. Gill.

Anon. (1937). **Animal Health Research.—Contributions by Australian Wool Board.**—*J. Coun. sci. industr. Res. Aust.* **10.** 173.

Out of funds which it had collected from the levy of 6d. per bale of wool, authorized by the (Australian) Wool Tax Act of 1936, the Wool Board decided to make substantial contributions to the Australian Council for Scientific and Industrial Research in order that research in certain problems of animal health might be extended and intensified. A promise was made of £17,500 towards the establishment of an experimental sheep station in Queensland and in addition some £8,000 was granted, in various sums, in connexion with researches on nutrition, parasitology, genetics, fertility problems, sheep blowfly, toxaemic jaundice, foot-rot and ophthalmia in sheep.—D. A. Gill.

French West Africa. (1938). Arrêté du Gouverneur Général fixant les règles d'organisation des Services Zootechniques et des Epizooties en A. O. F.

[Order on the Organization of the Livestock and Animal Diseases Services]. —*Bull. Off. internat. Epiz.* **15.** 818-824.

The duties of veterinarians include the control of disease, inspection of food of animal origin, encouragement of improved breeding and nutrition, supervision of the conditions of the sale of animals, and the study of fauna and flora and their usefulness or harmfulness to livestock. Veterinary duties are limited to care of Government service animals and of recognized breeders, except in the case of contagious, or suspected contagious disease. The services are under the control of a veterinarian responsible for all the territories of French West Africa with the title of " Inspecteur-Général de l'Élevage ", who has wide administrative powers. In each colony, the Services are under the control of the Governor for administrative purposes, but for technical purposes, under that of a veterinary " chef du Service Zootechnique et des Epizooties ". The various officials, veterinary and non-veterinary, their relationships with each other and with the administration, and their respective powers and duties, are given in detail. Veterinary " auxiliaires " and breeding supervisors with limited powers act strictly under the orders of the fully-qualified veterinary officials. The choice of methods of using vaccines and sera rests with the veterinary officials. Reports, in most cases quarterly and annual, must be furnished by the different officials.—D. H. Willson.

Müssemeier. (1937). Die Aufgaben des Berufes. Die Aufgaben des Tierarztes in der Tierseuchenbekämpfung. **[The Role of Veterinarians in Animal Disease Control].**—*Dtsch. Tierärztebl.* **4.** 257-261.

M. emphasizes the economic importance to Germany of state-organized animal disease control, shows how it is reducing mortality amongst animals, and outlines the important duties of veterinarians in this work, in co-operation with the " Veterinärpolizei ". These duties are very extensive : veterinary officers must see that the execution of legislative measures is adapted to the special circumstances of an epidemic ; they have authority to institute special decrees in an emergency. M. indicates the importance of veterinary supervision of regulations to check the spread of disease, and also of veterinary research.—D. H. Willson.

I. Schappes, H. (1937). Die Blutkörperchensenkung bei den Haustieren mit dem Apparat nach Reichel. **[Blood Cell Sedimentation Test on Animals with Reichel's Apparatus].**—*Wien. tierärztl. Mschr.* **24.** 573. 1 table.

II. Holm. (1937). Die Senkungsgeschwindigkeit der roten Blutkörperchen bei 263 gesunden 4jährigen Pferden. **[Red Blood Cell Sedimentation Rate in 263 Healthy Four-Year-Old Horses].**—*Dtsch. tierärztl. Wschr.* **45.** 437-439. 2 tables. [Numerous refs.]

I. S. determined the blood sedimentation rate in domestic animals by means of Reichel's apparatus, with which the rate is a little faster than that obtained by the Linzenmaier-Reunert method ; the difference, however, is only obvious with horse blood, being very slight with that of all other animals. The universal use of Reichel's apparatus is recommended.

II. Using the microsedimeter of Kanitz, the author determined the blood sedimentation rate in 263 four-year-old horses (117 mares and 146 geldings) all kept under the same conditions. He found the rate to be individual ; it was slower in mares than in geldings, and differed according to the breed. In all cases sedimentation was complete after 24 hours, and amounted to an average of 30·1 mm.%.

—F. Freudenberg (Hamburg).

Iljin, N. A. (1938). **Selective Thallium Moult in Sheep.**—*Nature, Lond.* **141.** 162. [4 refs.] [See also *V. B.* **8.** 122].

The influence of different doses of thallium acetate upon the heterogenous fleece was studied, and the results showed that the thallium threshold is approximately 11·5 mg. for the kemp and about 9·0 mg. for the fine fibres. It is suggested that selective moulting by means of thallium makes it possible to obtain from coarse-woolled sheep with mixed wool a fine wool approaching or even equalling merino as to quality, but the obstacle to a wide application of the method is the presence of certain harmful by-effects which are to be described elsewhere.—R. A.

FONTANA, G. (1937). Può la fecondazione artificiale essere dannosa ? [**Harmful Aspects of Artificial Insemination**].—*Azione vet.* **6.** 592-597. [7 refs.]

F. discusses the technique for the artificial insemination of domestic animals and the objections which have been raised against it. He concludes that the practice is of the greatest value and considers that the resulting offspring are as healthy and vigorous as those produced normally. He stresses the importance of becoming fully conversant with the technique before practising the method.—J. A. N.

FINLAND. (1936). Vuotakomitean mietintö. [**Report of the Committee for the Prevention of Damage to Hides**]. pp. 146. Numerous tables and photographs, 1 map. Helsingfors.

The committee investigated the causes of damage to hides in Finland and found that the commonest were ox warble flies, barbed wire, machinery used for preparing hides for industrial purposes, careless slaughtering and storage. The warble fly loss is reckoned at 35 million Finnish marks [= about £176,000 at par] and the barbed wire loss at 20 million marks [= £100,000] annually. The damage from careless flaying is also thought to amount to many million marks.

The committee recommended an obligatory ox warble fly campaign at the expense of the state. It also recommended that regulations for the use of barbed wire should be introduced and that iron grooming apparatus should be replaced by parts made of stiff rubber. In order to prevent damage during slaughter a system of inspection by veterinarians should be introduced and hides should be divided into three groups according to quality. Hides in the third group should be excluded from commercial use.—R. STENIUS (HELSINGFORS).

I. HARTLEY, P. (1936). **Report on the International Biological Standards Maintained at the National Institute for Medical Research, Hampstead, London, on Behalf of the Health Organisation of the League of Nations.**—*Quart. Bull. Hlth Org. L. o. N.* **5.** 713-727. 3 tables.

II. JENSEN, C. (1936). **Report on the International Biological Standards Maintained at the Statens Serum Institut, Copenhagen, Denmark, on Behalf of the Health Organisation of the League of Nations.**—*Ibid.* 728-734. [1 ref.]

III. JENSEN, C. (1936). **A Proposed International Standard for Gas-Gangrene Antitoxin (Histolyticus).**—*Ibid.* 659-689. Numerous tables. [4 refs.]

IV. WALBUM, L. E., & REYMANN, G. C. (1936). **Memorandum Concerning an International Standard for Gas-Gangrene Antitoxin (Histolyticus).**—*Ibid.* 690-694. 4 tables.

I. The Institute is charged with the care and preservation of international biological standards, their distribution to laboratory workers throughout the world, and the establishment of the necessary administrative procedures to render the distribution effective. The report recommends the system of distribution applied to the vitamin standards adopted by international agreement in 1931 and 1934; by this system, supplies of the standards for vitamins A, B_1, C, and D,

are sent out from the Institute at Hampstead to national distributing centres, which, in turn, make them available to laboratories in the individual countries. It is suggested that this system, found to be economic and efficient in the case of the vitamin standards, should be applied to the other international biological standards maintained at Hampstead. These include digitalis, sulpharsphenamine, and ouabain. Tables give details and figures of their international distribution.

II. An account of the " general principles followed in establishing a standard serum for international use ". The use of a standard serum has been found preferable to that of a standard toxin, toxins being generally " too unstable and too variable in their combining power to be suitable as standards ". The procedure followed in preparing a new standard for international adoption is illustrated in the case of the standard for gas-gangrene antitoxin (*histolyticus*) [See III, below]. The methods of issue of the standards, ensuring economic distribution and the preservation of the preparations, are given in detail. With the first dispatch of each standard to an applicant, a memorandum is sent out, containing a short description of the standard preparation and unit and suggestions for its practical application, methods of assay, etc. The standards maintained at Copenhagen include tetanus antitoxin, " old " tuberculin, and staphylococcus antitoxin.

III. An account of an international enquiry to obtain " such information and data relating to a dry stable preparation of *histolyticus* antitoxin as would enable the Permanent Commission on Biological Standardization to arrive at a decision as to its suitability and practicability for adoption as the international standard for this antitoxin ". As the result of experiments by experts of several countries, which are described in detail, the adoption of a preparation as the international standard was recommended to the Commission.

IV. The memorandum, which was sent out to the experts of different countries taking part in the enquiry, indicates the unit proposed for international adoption as the result of investigations at the Statens Serum Institut, Copenhagen, and makes suggestions for the tests to be carried out.—D. H. Willson.

Kögl, F., Fildes, P., Lwoff, A., Knight, B. C. J. G., Richardson, G. M., Sinclair, H. M., & Tincker, M. A. H. (1937). **Discussion Meeting on Growth Factors.**—*Proc. roy. Soc.* Ser. B. **124.** 1-13. [18 refs.]

A general discussion of growth factors (apart from true vitamins) which play an important part in microbiology. Those of veterinary interest which are discussed are :- (a) haematin (*i.e.*, X factor of the haemophilus group); (b) pyridine-nucleotide-phosphates (*i.e.*, V factor), and (c) the growth factor of the staphylococcus, consisting of three parts—pyrimidine and thiazole (derivatives of vitamin B), and nicotinicamide; the latter is not of vitamin origin.

It is thought that the accessory growth factors do not function as true catalysts, but are utilized in the synthesis of catalysts and carriers which are necessary for growth.—E. J. Pullinger.

I. Seiffert, G. (1937). Ueber das Vorkommen filtrabler Mikroorganismen in der Natur und ihre Züchtbarkeit. [**The Presence of Filtrable Micro-Organisms in Nature and the Possibility of Cultivating Them**].—*Zlb. Bakt. I.* (*Orig.*). **139.** 337-342. [12 refs.]

II. Seiffert, G. (1937). Filtrable Mikroorganismen in der freien Natur. [**The Presence of Filtrable Micro-Organisms in Nature**].—*Ibid.* **140.** 168-172. 6 figs. on 1 plate.

I. When earth, compost, decayed leaves, dung or liquid manure are diluted with water, filtered, and cultivated they yield small colonies containing bodies resembling those of contagious bovine pleuro-pneumonia.

II. Describes the types of colonies and elementary bodies found in I, and compares them with the findings of other workers.—P. S. Watts.

Olitsky, P. K., & Harford, C. G. (1937). **Intranuclear Inclusion Bodies in the Tissue Reactions Produced by Injections of Certain Foreign Substances.** —*Amer. J. Path.* **13.** 729-748. 7 figs. on 2 plates, 2 tables. [Num. refs.]

The authors were able to induce the formation of intranuclear inclusion bodies by the subcutaneous injection of g. pigs with aluminium hydroxide, aluminium oxide, ferric hydroxide or carbon. Negative results were obtained with barium sulphate, silver chloride, hard paraffin and agar.

The inclusion bodies resembled very closely those found in virus diseases, but attempted transmission to other g. pigs by inoculating the inclusion bodies by various routes has given negative results.—A. Robertson.

Olitsky, P. K., & Harford, C. G. (1938). **Further Observations on Intranuclear Inclusions Produced by Non-Virus Materials.**—*Proc. Soc. exp. Biol., N.Y.* **38.** 92-94. [2 refs.]

The authors produced demonstrable intranuclear inclusion bodies in the phagocytic cells of the nodules developing in g. pigs as the result of subcutaneous inoculation of rabbit and g. pig brain, fresh or autoclaved, but not of mouse brain. The injection of aluminium hydroxide into the pericardium and peritesticular tissue produced nodules in which cells with inclusion bodies were present. —H. S. Purchase.

Anon. (1937). **Author and Subject Index to the Government Veterinary Reports of the Transvaal and Union of South Africa, 1903-1932.** pp. 122. Pretoria: Govt. Printer. [4to].

This is a complete index to the Reports of the Government Veterinary Bacteriologist, Transvaal, from 1903-1910, the Commemoration Report, Veterinary Bacteriological Laboratories, 1909, and the veterinary reports of the Union of South Africa from 1911-1932. [The latter were continued by *The Onderstepoort Journal of Veterinary Science and Animal Industry*, from 1933 onwards].

The Index is alphabetically arranged, authors and subjects being listed separately, and thus simplifies the task of finding references in these important publications. Such collective indexes are of the greatest possible value.

Anon. (1937). **Handbook of Scientific and Technical Societies and Institutions of the United States and Canada.** pp. 283. Washington, D. C.: National Research Council. [3rd Edit.] [8vo] [$3].

This is an extremely useful reference book giving particulars of the addresses, serial publications, officers and aims of 930 scientific and technical organizations in the U.S.A. and 143 in Canada. The entries are arranged alphabetically, information concerning the two countries being separately catalogued.

OFFICIAL AND OTHER REPORTS.

Dominion of Canada. (1937). **Nineteenth Annual Report of the National Research Council Containing the Report of the President and Financial Statement, 1935-1936.** pp. 166. 6 tables, 6 appendixes. Ottawa: National Research Council. [8vo].

This report is mainly concerned with investigations sponsored by various

Associate Committees, only two of which were concerned with animal pathology. The Associate Committee on Tuberculosis briefly mentioned BCG vaccination of cattle and of children.

The Associate Committee on Parasitology recorded investigations made under the direction of T. W. M. Cameron relating to artificial fertilizers or other substances which can be added to manure to sterilize it against free-living stages of sclerostomes, the most lethal of those tested being paradichlorbenzene and urea. The Committee also reported on larvicides for the destruction of warble fly larvae (a standard derris wash being the most efficient), the parasite *Tetrameres crami* and " duck malaria " as causes of severe losses in young ducks, a heterophyid fluke, *Apophallus venustus*, found in cats fed on fish, with its life-history and pathogenicity, schistosome dermatitis, and some parasites of sheep. Papers published during the year are listed.—E. A. Watson.

Canada, Ontario. (1936). **Report of the Department of Agriculture, Ontario Veterinary College, for the Five Months' Period from November 1st, 1934, to March 31st, 1935.** [McGilvray, C. D.] pp. 10. Toronto: T. E. Bowman. [8vo].

Canada, Ontario. (1936). **Report of the Ontario Veterinary College, 1935.** [McGilvray, C. D.] pp. 32. 7 figs., 2 tables. [9 refs.] Toronto: T. E. Bowman. [8vo].

Canada, Ontario. (1937). **Report of the Ontario Veterinary College, 1936.** [McGilvray, C. D.] pp. 30. 6 figs., 4 tables, 1 graph. [2 refs.] Toronto: T. E. Bowman. [8vo].

These reports give details of the courses of study and instruction, animal clinics, laboratory examinations and investigations in connexion with extension work. They contain a number of appendixes or special articles which are reviewed elsewhere under the authors' names in this *Bulletin*.—E. A. Watson.

Australia, New South Wales. (1937). **Live Stock Diseases Report (No. 12). Recording Control Work during the Year ended 30th June, 1936.** [Henry, M.] pp. 24. 4 tables, 1 graph. Sydney: David Harold Paisley, Govt. Printer. [8vo].

The Chief Veterinary Surgeon in his introductory remarks deplored the universal inadequacy of staff, which was a serious hindrance to the accomplishment of much that would be beneficial both in research and in field control work.

The provision of a tubercle-free milk supply by the control and eradication of Bovine Tuberculosis received much public attention during the year. Consideration was also given to securing better and more uniform branding of stock to obviate hide damage. Legislation was prepared concerning the branding of pigs to assist in disease control, the tattooing of poultry for identification of ownership, and the control of stock foods and medicines.

Infectious Disease Control.

Cattle Diseases.—There were 31 outbreaks of Anthrax during the year, a few of them occurring outside the usual area. The disease was almost confined to a narrow belt of country running north and south through the centre of the state, most of the outbreaks occurring in an area about 100 by 200 miles in extent. On the other hand Blackleg, of which there were 83 outbreaks (80 in cattle and three in sheep) occurred chiefly in the coastal country, especially in the far north and far south of the state. The tubercle-free and contagious abortion-free herd schemes were continued, but were greatly hampered by lack of staff.

Piroplasmosis occurred on nine farms, involving a total of 14 cattle. An outbreak some 15 miles south of the Queensland border is the most southerly point to which the disease penetrated. The means by which the disease was brought to this farm was not clearly determined.

The position regarding Contagious Bovine Pleuro-Pneumonia was very satisfactory, the complement-fixation test for the detection of carriers proving highly efficient. A graph is included demonstrating the relationship that undoubtedly exists between the incidence of this disease in N.S.W. and the numbers of cattle introduced from other states.

Work on cattle tick control in the affected areas of northern N.S.W. progressed despite difficulties created by drought, and while the infected area was found to be more extensive than was thought in some directions, in other areas the ticks were eradicated and restrictions lifted. Over 3¼ million cattle were examined for ticks during the year.

Sheep Diseases.—Vaccination against Infectious Entero-Toxaemia of sheep is proving of great value, especially to the fat-lamb raiser.

Heavy mortalities occurred from " Black Disease " of sheep, which persisted right through the winter. A commercial vaccine against the disease, the use of which was followed by mortalities, was found to contain active toxin of *Clostridium oedematiens*, from which the vaccine was made.

Botulism, associated with the feeding of damaged cereal hay, was again encountered, and a soil survey in certain affected districts revealed *Cl. botulinum* organisms in about half the samples examined.

In the late summer and autumn losses from acute Haemonchosis were again encountered in sheep in the south and west districts. Trichostrongylosis was somewhat prevalent in the summer and autumn of 1936, but improved feeding, together with treatment by copper sulphate and nicotine sulphate drenches, was generally effective. Oesophagostomiasis occurs to a serious extent only in the northern district, and copious weak arsenical enemata were found highly efficient in treatment. The season was particularly favourable to fluke infestation, and in spite of the wide-spread use of carbon tetrachloride drenching, combined with snail destruction, there were several heavy losses from acute Fascioliasis.

Pig Diseases.—A particularly severe outbreak of *S. cholerae-suis* infection in pigs was investigated, some suspicion of Swine Fever having arisen, but this disease was proved not to be present.

Poultry Diseases.—Only one small outbreak of Fowl Cholera occurred.

Further work on Infectious Laryngotracheitis confirmed the occurrence of " carriers " among recovered birds, and demonstrated the natural immunity of turkeys, ducks, starlings, quail, pigeons, sparrows, g. pigs, rabbits, rats and mice. The disease occurred throughout the year, but the mortality rate was generally low. Among turkeys Sinusitis caused heavy losses and treatment was not satisfactory. Subcutaneous injection of colloidal silver was used extensively, but its efficacy is doubtful.

Livestock Census.—The number of livestock actually present in the States as on March 31st, 1935, are given as :- Horses 534,853 ; cattle, 3,361,771 ; sheep, 53,827,000 ; pigs, 397,535.

Veterinary Research Station, Glenfield.

The work was seriously impeded by shortage of staff, and the Director, Dr. H. R. Seddon, resigned during the year. The usual range of diagnostic work was undertaken, but testing for *Salmonella pullorum* infection in poultry declined, as such tests are now generally conducted by practising veterinarians.

Horse Diseases.—Mortality among horses is mentioned in which the possibility of poisoning by a species of *Lobelia* is under consideration. An intense Gastro-Enteritis sometimes encountered in horses is often associated with a massive helminth infestation, but the acute lesions are thought to be due to some other cause. No bacterial toxins were detected in the bowel contents. In one district horses showed symptoms of Equine Encephalomyelitis, but no infective agent could be discovered.

Cattle Diseases.—The collection of data from a herd that had been seriously affected by Sterility continued. Progeny of cows previously affected with Endometritis remained unaffected if mated to a clean bull, but those mated to the old and infected bulls showed evidence of genital infection on calving. *Claviceps paspali* was prevalent in the seeding buds of paspalum in N.S.W. for the first time during the summer. Cattle were extensively affected by it, and experiments at Glenfield showed that, while the symptoms could be induced by feeding large quantities of the " ergots ", the " honey dew " stage was innocuous.

Sheep Diseases.—In sheep blowfly investigations, after a year's trial boric acid in the drinking water was found valueless as a preventive ; the Mules operation was performed on some lambs, whose future history as regards strike will be recorded, and the lambs from ewes classed on breech fold conformation as relatively unsusceptible are now under observation. Tests were carried out on various chlorated hydrocarbons as possible anthelmintics for sheep, but without success. An extensive outbreak of Toxaemic Jaundice in sheep occurred, and investigations to which it gave rise are in progress.

Poultry Diseases.—Sixty-four strains of *S. pullorum* were subjected to sugar fermentation tests. All failed to ferment maltose and dulcite, thus differentiating them from *S. gallinarum*.

Spirochaetosis was found to be transmissible by the red mite (*Dermanyssus gallinae*).—D. A. Gill.

New Zealand. (1937). [**Report of**] **Live-Stock Division** [**1936-1937**]. [Barry, W. C.]—*Rep. Dep. Agric. N.Z., 1937*. pp. 6-14. 6 tables.

Horses.—With the exception of odd cases of Strangles no contagious diseases of horses were reported.

Cattle.—Of 417,706 cattle (exclusive of calves) examined for Tuberculosis at abattoirs and meat export slaughterhouses, 6·8% were found affected in some degree. Of 20,577 tuberculin tests conducted, 4·7% were positive.

Seventeen farms were reported as newly affected with Johne's Disease. Intradermal johnin tests, using synthetic johnin, continued. Cattle for export to South Island require a certificate of negative reaction to the double intradermal test. 28,969 calves were vaccinated against Blackleg, and 972 animals were condemned for Actinomycosis, and the owners compensated. Parasitic Gastro-Enteritis and Bronchitis were serious in young cattle. 427 animals were condemned for malignant growths and compensation was paid. Mastitis, Contagious Abortion and sterility remain serious problems. There is no evidence of a specific disease factor in temporary sterility.

Sheep.—Of 2,608 ewes vaccinated with Enterotoxaemia vaccine prepared at the Veterinary Laboratory, Wallaceville, 0·306% died. Losses in 2,500 unvaccinated controls were 3·36%. In a further trial in which 1,141 ewes were vaccinated with an Australian commercial vaccine the losses were 1·92% compared with 3·68% in 2,275 control ewes.

The necessity for supplementary and balanced feeding is emphasized in the control of gastro-intestinal parasites. A nicotine sulphate and copper sulphate

drench is advocated. There was a seasonal increase in FOOT-ROT due to wet conditions. Climatic and feed conditions did not favour the onset of PHOTOSENSITIZATION.

PIGS.—Approximately 1,107,998 were slaughtered. Of 1,060,835 carcasses inspected 18·33% were affected with TUBERCULOSIS, the majority showing only slight head lesions. PASTEURELLOSIS and *Salmonella cholerae-suis* infection were responsible for many deaths in young pigs.

A Superintendent of the Pig Industry was appointed to organize and co-ordinate the various activities for swine husbandry. A levy of twopence per pig is made for the purpose of establishing a national pig instructional service. A national sow-recording system was established with a view to the selection of better strains of breeding stock. The possibility of grading pigs with a view to encouraging the production of higher grade pigs is discussed.

LIVESTOCK STATISTICS.—Cattle decreased by 39,421 to 4,254,078, but sheep increased by 1,036,950 to 30,113,704, pigs by 45,708 to 808,463 and horses by 3,184 to 276,170.

SLAUGHTER OF STOCK.—The total numbers of stock slaughtered at registered premises were as follows :- sheep, 2,901,315, lambs 9,294,722 ; cattle, 506,141 ; calves, 1,045,827, and swine 1,062,510.

The Report of the Chief Poultry Instructor is included and also the reports of the Livestock Husbandry Officer and Wool Instructional Officer.—L. W. N. F.

NEW ZEALAND. (1937). **Report of Veterinary Laboratory, Wallaceville [1936-1937].** [HOPKIRK, C. S. M.]—*Rep. Dep. Agric. N. Z., 1937.* pp. 15-20. 1 table.

ROUTINE.—A total of 10,248 specimens were examined. 41,426 specimens (chiefly milk samples for MASTITIS and blood samples for CONTAGIOUS ABORTION) were also examined at Hamilton sub-laboratory.

CATTLE DISEASES.—The primary half-yearly test (double intradermal test, using johnin produced on synthetic medium) of 1,458 cattle in 25 herds known to be affected with JOHNE'S DISEASE yielded 8·7% reactors, which were slaughtered.

Trichomonas bovis infection was found in a herd of cows. Bulls were classified for sterility by semen examination. Experimental evidence suggests that dolomite in ensilage reduces the incidence of GRASS TETANY.

" Chlorine ", entozon, and ammonia treatment of quarters clinically affected with MASTITIS was tried out.

SHEEP DISEASES.—Formalinized whole-culture vaccine was prepared and issued in bulk for ante-natal inoculation of ewes against pulpy kidney. Vaccine was also issued against CONTAGIOUS ECTHYMA.

V. G. COLE was appointed to investigate parasites of sheep. W. V. MACFARLANE showed the intermediate host of the liver fluke [*Fasciola hepatica*] in New Zealand to be a pulmonary snail, *Myxas ampulla.*

Epizootics of PNEUMONIA occurred, a Gram-negative bacillus being constantly present in pleural exudate, but inoculation consistently failed to reproduce the disease.

Feeding experiments were carried out to determine the effect of the rosette stage of ragwort on sheep and cattle.

PIG DISEASES.—*Salmonella cholerae-suis* infection was considered the most serious infectious disease of pigs.

Zinc poisoning was found to follow passage of skim milk through long, zinc-lined, lead pipes. The condition was produced experimentally using zinc lactate ; the symptoms were severe arthritis with marked weakening of muscle insertions.

POULTRY DISEASES.—TUBERCULOSIS, LYMPHOMATOSIS and salt poisoning were observed.

RESEARCH.—I. J. and Marion M. CUNNINGHAM continued work on the relation between dietary protein and sterility, on magnesium metabolism, and on vitamins A and D. M. S. W. JOSLAND carried out routine biochemical and haematological work, and also work on the metabolism of cobalt in rats and sheep.

—L. W. N. FITCH.

UNITED STATES OF AMERICA. (1937). **[Report of] Veterinary Division [U.S. Army, 1937].** [FOSTER, R. J.]—*Rep. Surg. Gen. U.S. Army, 1937.* pp. 179-183.

GENERAL.—The personnel consisted of 126 officers and 590 other ranks, with a reserve of 1,070 officers, of whom 100-120 were on duty throughout the year as meat inspectors for the Civilian Conservation Corps. The average animal strength for 1937 was 17,359 horses and 6,039 mules. Of 9,526 horses examined for purchase, 32·04% were accepted. The reasons for rejection and the numbers rejected under each category are given. Veterinary Officers were instructed at the Army Veterinary School, Medical Field Service School and Chemical Warfare School. Courses of instruction in Animal Management and Allied subjects were given by Veterinary Officers at various centres. An officer was instructor at The School for Packers.

LABORATORY SERVICE.—This was conducted at four centres. Besides the routine diagnostic work, and the preparation of large quantities of biological products, 6,955 samples of a great variety of food were examined. Research was conducted on the improvement of TYPHOID vaccine, on ENCEPHALOMYELITIS, HABRONEMIASIS and other tropical diseases. The condition responsible for a common form of lameness in horses was found to be a "degenerative type of ARTHRITIS," and not OSTEOMALACIA as was previously believed.

MEAT AND DAIRY HYGIENE.—The quality and sanitary conditions of all food for the army from the time of its acceptance from the contractor until it is consumed is under constant supervision and inspection by Veterinary Officers. Sanitary supervision of dairies supplying milk to the army is maintained. The quantities of foods dealt with are tabulated and the causes of rejection analysed.

FORAGE INSPECTION.—The condition under which inspection is undertaken is detailed and the results of the inspection are tabulated.

ANIMAL MORBIDITY AND MORTALITY.—The extent of and the reason for the sickness and mortality of army animals throughout the year are tabulated in great detail.—G. WILLIAMSON.

ESTONIA. (1937). Riikliku Seerumi-instituudi diagnostilise osakonna tegevus 1936. a. **[Report of the Diagnostic Department of the State Serological Institute for the Year 1936].** [SIKKUT, M.]—*Eesti loomarstl. Ring.* **13.** 89-94. 2 plates.

During the year, 15,473 samples of material were examined, of which 12,143 were for BRUCELLOSIS. Of these, 12,092 were blood samples, 8·35% being positive and 4·07% suspicious. 1,636 samples were examined for TUBERCULOSIS. Five (0·87%) out of 575 milk samples were positive for TB. by g. pig inoculation, and out of 1,042 bronchial mucus samples 219 (21·01%) were positive. Tubercle bacilli were also found in eight bovine lungs and one hen.

Examinations for SWINE ERYSIPELAS were carried out on 422 samples, of which 186 were positive. ANTHRAX occurred in two horses and nine head of cattle;

Rabies in 17 dogs, in five head of cattle, and in one pig. 112 doses of antirabic vaccine were issued by the laboratory. Mastitis due to *Streptococcus agalactiae* was diagnosed in 65 cases, *coli*-mastitis in seven cases and mastitis due to staphylococci in one case. Nine blood samples of horses were examined for Glanders, but all were negative. Parasites were found in 11 piglets—*Ascaris lumbricoides*, *Metastrongylus elongatus*, *Strongyloides papillosus*, *Trichuris suis* and coccidia; Enzootic Hepatitis occurred in ten piglets, *Bacterium coli* infection in nine, Hepatic Cirrhosis in six, Paratyphoid in three, Streptococcal Pneumonia in two, Broncho-Pneumonia in three and Influenza in one. Malignant Foul-Brood was diagnosed eight times in bees, and Benign Foul-Brood in two cases. Biological diagnosis of pregnancy was carried out in 12 horses.—E. Ridala (Tartu).

Japan. (1936). Statistique annuelle des maladies infectieuses des animaux en 1935. [**Statistical Report on Animal Diseases in 1935**].—*Bull. Off. internat. Epiz.* **13.** 466-469. 2 tables.

Anthrax occurred in 20 districts, causing the death of 167 animals; Swine Erysipelas in 30 districts in 2,291 pigs, of which 132 died; Swine Plague in 22 districts in 861 pigs, of which 236 died; Bovine Brucellosis in 26 districts in 3,279 animals; Fowl Cholera in two districts; Blackleg in 30 districts with a total mortality of 62; Swine Fever in 21 districts with 655 deaths among the 8,811 pigs affected; Rabies in two districts, 11 dogs being affected and destroyed, and Equine Mange in three districts. There were no cases of the following contagious diseases:– Glanders, Rinderpest, Foot and Mouth Disease, Contagious Bovine Pleuro-Pneumonia, Horse Pox, Sheep Pox, Goat Mange or Sheep Scab. Details are given of the use of vaccines and sera for the control of certain of the above diseases.

Bovine Tuberculosis was investigated by clinical methods and tuberculin tests, only 1·13% of 143,567 cattle tested being found tuberculous.

A table shows the number of cases of Equine Infectious Anaemia observed in 1933, 1934 and 1935; the average was 1,350.—J. E.

Anon. (1936). Z XVII. řádné valné hromady Zvěrolékařské komory pro ČSR. [**Seventeenth General Meeting of the Veterinary Association of the Czechoslovakian Republic**].—*Vestn. Zvěrolék. Kom.* **6.** 49-63.

The following matters of importance to the Association were discussed at the Meeting:– (1) the organization of all veterinarians in the Czechoslovakian Republic in one state association (up to the present, private practitioners and city veterinarians only are members of the association); (2) legislative protection of the practice of veterinary medicine, and the prohibition of all unqualified intervention in the treatment of animals, whether gratuitous or otherwise; (3) modern legislation for meat inspection and food control; (4) a plan for the eradication of tuberculosis in cattle, and (5) the proper role of veterinarians in zootechny.
—E. Přibyl (Brno).

BOOK REVIEWS.

Bourdelle, E. [Professeur de zoologie au muséum national d'histoire naturelle], & Bressou, C. [Professeur d'anatomie, directeur de l'École Nationale Vétérinaire d'Alfort]. (1937). Anatomie régionale des animaux domestiques. I. Équidés. Cheval, âne, mulet. Fascicule IV. Région abdominale: Membre postérieur ou pelvien. [**Anatomy of Domestic Animals.**

Vol. I. The Horse, Ass and Mule. Part IV. The Abdominal Region and Pelvic Limbs]. pp. 685-977. 157 figs. Paris: B. Baillière et fils. [2nd Edit.] [8vo] [Fr. 254].

This the final part of a set of four books published in recent years devoted to the anatomy of equines, the authors having also produced books on ruminants and swine.

This part is a complete text-book dealing with external anatomy, osteology, joints, muscles and viscera, with their associated blood and nerve supplies. The numerous figures are pencil drawings or line diagrams in black and white, with red, yellow and blue colouring superimposed on some of them to show up the different structures.

The matter as arranged and printed is easy to follow. The book can be strongly recommended.—J. E.

HEIBERG, K. A. (1938). Weiteres über Geschwülste. [**Further Consideration of Tumours**]. pp. 56. 19 figs., 6 tables. [Numerous refs.] Copenhagen: Levin & Munksgaard; Leipzig: Georg Thieme. [8vo] [Kr. 2.50]. [RM. 1.50].

In this small monograph, a variety of neoplasms of importance in human pathology are considered with reference to their quantitative cytology, particular attention being paid to the size of the nuclei. For example, two types of basal-celled carcinoma of the skin can be differentiated on a basis of nuclear size and this differentiation may be of considerable importance in prognosis.

The histological structure of naevi is discussed and the modern view of their origin from the cells of Schwann of peripheral nerves is mentioned.

On a basis of nuclear measurements it is possible to distinguish readily between adenoma and carcinoma of the thyroid; for example, the nuclear volume of the cells of the former is approximately one quarter that of the cells in a carcinoma.

A number of photomicrographs and tables illustrate the neoplasms discussed and a list of references to recent papers is given at the end of each chapter.—E. G. W.

SILBERSIEPE, E. [Prof. Dr., Direktor der Chirurgischen Tierklinik der Universität Berlin]. (1937). Einiges über den Kryptorchismus der Pferde. [**Cryptorchidism in the Horse**]. pp. 32. 4 figs., 2 tables. [19 refs.] Berlin: Richard Schoetz. [8vo] [RM. 1.40].

Into this small publication are packed the essentials of the author's 30 years' experience as a surgeon with regard to the "rig" operation. It is written with the object of aiding young practitioners in equine surgery.

The booklet can be recommended with confidence to those interested in the subject.—J. E.

—. (Jan. 1938). Beiträge zur Geschichte der Veterinärmedizin. [**Contributions to the History of Veterinary Medicine**]. **Vol. 1. No. 1.** pp. 63. Berlin: Richard Schoetz. [8vo] [RM. 18].

This is an old periodical under a new name. Whilst the former *Veterinärhistorische Mitteilungen* used to appear as a supplement in one or other of the German veterinary publications, it will in future appear independently as named above, volume 1 being equivalent to volume 18 of *Vet. hist. Mitt.*

It is of great importance in the field of veterinary history.—J. E.